COMBAT VEHICLES OF RUSSIA'S SPECIAL FORCES

Spetsnaz, airborne, Arctic and interior troops

MARK GALEOTTI

ILLUSTRATED BY ADAM HOOK

NEW VANGUARD 282

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COMBAT VEHICLES OF RUSSIA'S SPECIAL FORCES

INTRODUCTION

Special people need special vehicles. As Vladimir Putin has devoted effort and funds into modernizing Russia's armed forces and turning them into an instrument geared not just for defending the Motherland but also projecting power beyond its borders, in a range of conflicts and environments, this has encouraged a growing emphasis on special and specialist forces. These, in turn, have capitalized on the proliferation of domestic and even foreign suppliers to begin to acquire a range of vehicles meeting their particular needs. From highly mobile LMVs (Light Multi-role Vehicles) able to operate in the deserts of Syria or the streets of Ukraine, through dedicated fire support vehicles such as the air-droppable Sprut-SD, to amphibious tanks and drone-equipped security trucks, these are the workhorses of Russia's special forces.

In this, today's Russia is largely stepping away from the practices of its Soviet forebears. On the whole, the Soviets preferred standardization over niche production. There were clear exceptions, such as the specialist vehicles produced for their paratroopers, but they preferred to create variants on existing frames rather than new designs altogether. There were

Soldiers in snowsuits advance behind a GAZ Tigr LMV, during military exercises in Pskov. The armoured Tigr has become one of the workhorses of the Russian Army. It is especially well-geared for cold weather conditions, able to operate in temperatures from +50 to -50 centigrade. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

some memorable special vehicle designs, such as the turtle-shaped Object 279 tank designed to fight after a nuclear war, but mass-production usually won out. The *Spetsnaz* special forces, the Naval Infantry marines, the Interior Troops and other specialist forces generally made do. However, now that Russia is operating in increasingly complex conflicts and relying more on its various special forces, there is a new willingness to provide them with special vehicles to meet their perceived needs.

Furthermore, competition between Russian suppliers (and, very occasionally, foreign ones too) mean that there is an increasing proliferation of designs, and the wish lists of different services as well as the need politically to keep various interests happy often means multiple versions of similar vehicles are in service. Both the Ural and KamAZ automotive combines, for example, have their own responses to the Taifun ('Typhoon') design competition launched by the defence ministry in 2010 for a family of Mine-Resistant Ambush Protected (MRAP) 4x4 and 6x6 armoured vehicles. The Ural and KamAZ vehicles are distinctly different, and are already in service with several services, even while no central decision has been taken of one over the other. There is thus a sometimes bewildering plethora of different vehicles fulfilling similar roles in use between services – and sometimes even within the same service.

Amongst the light vehicles being trialled by the *Spetsnaz* is this lightweight buggy, able to carry four men and mount a heavy machine gun, and yet still reach top speeds of 130kph. (Vitaly Kuzmin)

THE *SPETSNAZ*: WHATEVER THEY NEED

The *Spetsnaz* commandos have two main roles, as elite light infantry or as deep-striking reconnaissance and sabotage forces. In the past, they largely had to make do with regular vehicles, not least to conceal their presence (or, indeed, very existence), although they were able to commandeer whatever they needed from other units. Sometimes, the needs of the battlefield even forced them to customize ad hoc 'technicals' based on commercial cars and trucks. This was a practice that emerged during the ten-year Soviet war in Afghanistan. Customized UAZ-469 jeeps provided nimble mobility and weapons platforms more suited to the valleys and foothills of that war, and even ZIL-131 trucks were sometimes fitted with ZU-23 twin 23mm anti-aircraft guns for additional fire support. Likewise, the first Chechen War (1994–96) in particular saw an under-prepared Russian military sometimes have to turn to field expedients to make up for a lack of vehicles and equipment suited for another counter-insurgency conflict, often fought in cities and mountains.

Since then, though, there has been a sea change in the scale and role of the *Spetsnaz* and the attention lavished on providing them with the equipment they need. The need to provide security for the 2014 Sochi Winter Olympics was used as an excuse to add a regiment and a brigade

A GAZ Tigr-M in Moscow during rehearsals for the 2019 Victory Day Parade, for which it sports the orange and black St George's ribbon with tricolour star decal along the side. Note the Arbalet-DM remote weapon station, with a 12.7mm Kord machine gun and four smoke grenade launchers. The turret includes regular and thermal-imaging cameras and a laser range finder. (Author's Collection)

to their strength, and there are now some 17,000 *Spetsnaz*.* The seizure of Crimea in 2014 appears to have demonstrated to the Kremlin their value, and since then they have received new equipment and are also increasingly visible at the forefront of Russian power projection ambitions, including deployments in Ukraine, Syria and even as far as Venezuela. As a result, they are not only acquiring vehicles intended for other arms, such as the paratroopers' BTR-D personnel carrier, they are also experimenting with exotic new acquisitions, such as the Chaborz M-3 buggy and Yamaha Grizzly all-terrain vehicle.

* See Elite 206 *Spetsnaz: Russia's Special Forces*

Of Lynxes, Tigers and Wolves: LMVs

The *Spetsnaz* use the full range of Light Multi-role Vehicles adopted by the Russian military. The workhorse is the GAZ Tigr ('Tiger'), a domestically produced 4x4 LMV in service since 2006. Rugged and lightly armoured, the Tigr has seen service in Crimea and the Donbas as well as Syria, and in 2013 an improved GAZ-233114 Tigr-M was introduced. This replaced the original diesel with a YaMZ-534 engine, added additional armour and protective systems, and has since become the Russian military standard LMV. Able to carry up to 11 soldiers as well as its crew, the Tigr is 5.7m long, 2.4m wide and high, and masses 7.2t. It can be fitted with a pintle-mounted 7.62mm PKP Pecheneg machine gun, a 12.7mm Kord heavy machine gun or a 30mm AGS-17 grenade launcher, as well as the new Arbalet-DM ('Crossbow-DM') remote-controlled turret with either the Kord or 7.62mm PKTM machine gun and thermal imaging sights. Widely used by other Russian services, the Tigr is also the platform for a range of specialist vehicles and now also produced in China and Belarus.

For a while, the 'Tiger' had to share the limelight with a lynx, specifically the Italian-made IVECO M65 Lince. In 2011, then-defence minister

A

SPETSNAZ TECHNICAL IN CHECHNYA, 1995

In the Soviet–Afghan War (1979–88), *Spetsnaz* frequently employed captured rebel technicals, armed civilian vehicles, both for their convenience and also to launch covert anti-insurgency operations. In the First Chechen War (1994–96), the Russian forces struggled both with problems of supply and maintenance, as well as the incompatibility of much of their equipment – geared for conventional mechanized operations on the plain – with mountain and urban warfare. Some *Spetsnaz* turned again to field-modified light vehicles, both military and civilian, adding weapon mounts and sometimes light armour to make technicals of their own.

Here, soldiers from the 22nd *Spetsnaz* Brigade are returning fire when their reconnaissance into the shattered streets of Grozny became an ambush. Their UAZ-469, originally assigned to the VAI, the military traffic police, was first seized by rebels and then pressed into service by the Russians. It has been fitted with a belt-fed 12.7mm DShK heavy machine gun to make it a powerful, if inaccurate fire platform. The inscription on the side, *Na Groznyy*, 'to Grozny', is intentionally reminiscent of the *Na Berlin* many Soviet tanks sported in the closing phase of World War II in Europe.

ВАИ
На Грозный

The Iveco M65 Rys may no longer be ordered by the Russians, but it continues to have its enthusiastic users. Here, paratroopers from the 106th Guards Airborne Division on exercise, in the latest 'Ratnik' battledress, deploy from their Rys. For the sake of standardization, though, it is likely that from 2020, remaining VDV stocks of the Rys will be cascaded to other elements of the armed forces, including the Military Police and the Ground Forces. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

Anatoly Serdyukov, in a drive to improve the efficiency of Russian military procurement, relaxed the near-ban on buying foreign equipment. At the end of that year, he signed a deal to buy M65s, which would be assembled in Russia as the Rys ('Lynx'). This proved highly controversial, not least thanks to the lobbying of the GAZ industrial concern. The M65 is smaller,

B

LMVs IN *SPETSNAZ* USE

The *Spetsnaz*, in keeping with their elite status and wide range of sometimes unconventional roles, use a range of light multi-role vehicles, of which these are some of the main ones. The Italian-made Iveco M65 Lynx (Rys) **(1)** was initially purchased in 2011, although plans to buy more than the initial order foundered on political grounds and also because it proved less capable at handling the extreme cold of the High North. Nonetheless, the *Spetsnaz* and airborne troops continue to value it for its agility and survivability. It has seen action in Syria and, as in this example, counter-insurgency operations in the North Caucasus. A soldier from the 25th Independent *Spetsnaz* Regiment can be seen providing covering fire with his Pecheneg GPMG. Note the snorkel that allows the M65 to ford water to a depth of 1.5m, as well as the soldiers' packs, slung on the outside of the vehicle.

The UAZ-3132 Gusar (Hussar) **(2)** is ultimately based on the venerable UAZ-469 light utility vehicle, a design dating back to the 1960s. It has a long-wheelbase chassis, a Toyota V6 engine, and a strengthened body with a large top hatch fitted with a ring-mount that can accommodate a range of weapons. It is a dated design, being phased out by more modern vehicles such as the Skorpion-LTA, but it is still widely used, especially by the special forces, as a light attack, reconnaissance and utility vehicle. This well-used example was deployed during the Second Chechen War (1999–2000); the meaning of the triangle painted on the door is unclear, as this is not a standard marking and was clearly applied in haste. It may be a recognition symbol if the rebels were also using Gusars (which at times they did), or it may mark the unit commander's vehicle.

The new standard Russian military LMV is the Gaz Tigr (Tiger) **(3)**, in both the GAZ-233014 STS and Tigr-M versions. This version was seen during the initial seizure of Crimea in 2014, and although deployed alongside Naval Infantry, its number plate demonstrated that it came from the Southern Military District. This suggests that it was actually part of the 22nd Guards *Spetsnaz* Brigade, not least given the Guards badge in the door – signifying a unit that fought with distinction in World War II. It mounts a PKP machine gun and an AGS-17 grenade launcher.

The VPK-3927 Volk (Wolf) **(4)** is a new design, which is being introduced in limited numbers in both short- and long-wheelbase versions. Designed with particular attention to the threat from mines, the Volk comes in a variety of models, with a particular emphasis on reconnaissance and patrol missions. This is the short-wheelbase 4x4 version fitted as a communications vehicle, assigned to the 24th *Spetsnaz* Brigade operating out of Irkutsk.

only able to carry 4 passengers, and more expensive than the Tigr, and also does not quite match its outstanding cross-country mobility. However, it is more reliable and above all is known for its extreme survivability, not least thanks to the ceramic protective cell around the crew compartment. Nonetheless, when Serdyukov was sacked in a corruption scandal in 2012, his successor Sergei Shoigu opted to focus on the Tigr-M. No more Rys were bought, although it remains in service, and has been seen used by Russian military police in Syria.

Main Russian Light Transport Vehicles in Service

	Tigr	Rys	UAZ-469	UAZ-23632 Patriot	UAZ-3132 Gusar	Volk
Type	LMV	LMV	Jeep	Pick-up truck	Jeep	LMV
Manufacturer	GAZ	Iveco	UAZ	UAZ	UAZ	GAZ
Year	2001	2001	1971	2005	2003	2010
Crew	2+9	1+4	1+5	1+7	1+5	2+8
Weight	7.2t	6.5t	1.7t	2.7t	1.8t	10.2t
Speed: road	140kph	130kph	135kph	150kph	150kph	130kph
Speed: cross-country	80kph	80kph	40kph	45kph	45kph	65kph

Buggies and ATVs

As befits a service that depends on speed and manoeuvrability, the *Spetsnaz* often used motorbikes in the past and are now turning to smaller vehicles. The National University of *Spetsnaz* – which, despite its name, is essentially a private training centre run by the local administration of Chechnya – has tried to interest them in its Chaborz dune buggy in various militarized configurations. (The name is a compound of *cha*, the word for bear in the Chechen language of Nokhchi, and *borz* meaning wolf.) While it has been adopted by the *Rosgvardiya*, as discussed below, as well as in a snowmobile variant, it is unclear if the *Spetsnaz* will opt for the Chaborz in more than token numbers. Meanwhile, the Kalashnikov concern has also moved into this market with its OV-2. This is a four-seat hybrid electrical-petrol design

This Chechen-made combat buggy is highly mobile, but operators suggest that the machine gun at the front and grenade launcher at the side may be overkill. (Vitaly Kuzmin)

with separate electrical drives for both front and rear axles, and a top speed of 100kph. Although the defence ministry has taken some examples and assigned them to the *Spetsnaz* for assessment, as of writing it is unclear if this will lead to any orders. They, like the VDV, are also testing out the new Eskadron ('Squadron'), a lightweight four-wheel open-frame buggy.

The Russkaya Mekhanika AM-1 quad bike, here mounting a PKM machine gun, has already become a firm favourite of the *Spetsnaz*, and is also increasingly used by the paratroopers (as in this case, shown by the VDV logo at the front) and other special units. (Vitaly Kuzmin)

There is at least as much interest amongst the *Spetsnaz* in small quad-bike All-Terrain Vehicles (ATVs). Conventional motorcycles have long been used for scouting and courier duties – the Soviet M72 heavy motorcycle, usually with a sidecar, was a staple of World War II and later reconnaissance – and today Kalashnikov is also hoping to secure orders for its electric SM-1 motorcycle. This has a 150km range and the promise of near-silent operation, but quad bikes offer greater stability and capacity. Initially, using the latitude to buy foreign equipment that their elite status bestows, they experimented with some Yamaha Grizzly ATVs, used by *Spetsnaz* in the Special Operations Forces Command. These established the value of the quad bike, especially for raiding and reconnaissance missions, and so domestic tenders were sought.

At present, the main one in *Spetsnaz* use is the Russkaya Mekhanika AM-1 Tulchanka, which is also favoured by the paratroopers and the marines. An agile two-person quad bike, based on the civilian Stels Leopard model, this typically mounts a 7.62mm PKM machine gun and even while weighing only 500kg, can tow a similar weight in a trailer. A slightly stretched version to carry supplies or even an 82mm mortar (which needs to be dismounted to be fired) has also been developed. Some AM-1s have also been fitted with an AGS-30 grenade launcher, occasionally as well as the PM, but the consensus is that fitting both weapons to a two-seater is overkill. With the Ground Forces also adopting quad bikes for various roles, as discussed below, this is likely to be a market other Russian companies will quickly try to fill.

The Air Assault Troops are proud of their distinctive history, role and mission, and events such as Victory Day or 2 August – Paratroopers' Day – are always chances to show this. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

THE AIRBORNE TROOPS: BY AIR AND LAND

Russia's Air Assault Troops (VDV) have constantly been squeezed between their largely theoretical role as a para-droppable attack force and their more usual role as helicopter-lifted or light mechanized infantry. During World War II, the Soviet VDV staged some major parachute assaults such as the 1942 Vyazma operation involving some 7,500 paratroopers and the disastrous

A BMD-2 with the PBS-916 parachute system introduced that allows it to be dropped, typically from Il-76 aircraft. Unlike the most modern systems, this relies on retro-rockets to cushion the final landing, slowing the descent to a still-jarring 3.5–5.5m per second, after the parachutes have brought it down at 16–23m per second. (Vitaly Kuzmin)

1943 Dneipr drop, in which 4,500 were deployed. Since then, though, such full-scale operations have been confined to military exercises. Nonetheless, it has always been an article of faith that the VDV must be ready and able for such a role, so almost from the very first they had their own special range of vehicles optimized for airlift, and given that new vehicles such as the BTR-MDM transporter and the Sprut-SD tank destroyer have recently been fielded, this looks likely to remain a priority.

The paratroopers use much of the same combat vehicles as the regular military and the *Spetsnaz*, with the Tigr-M LMV, including the high-roofed P-230T command version. They make only limited use of tanks or heavier infantry fighting vehicles, even though six companies are now being equipped with T-72B3 main battle tanks. This reflects a new commitment to make the VDV more of an all-round force, able to handle full-scale power-projection missions. The tank units can realistically only be deployed within or on Russia's borders, as only their An-124 and I-76 heavy lifters can carry T-72s. They thus allow the paratroopers to be deployed in counter-insurgency missions in the Russian North Caucasus or interventions into neighbouring countries such as happened in Georgia in 2008 and Ukraine from 2014, without needing to be supported by regular Ground Forces units. These companies may in the future be expanded into battalions, but this will depend on funding.

However, for longer-ranged missions, the bulk of the VDV will continue to use lighter units designed for airlift, and for this reason must confine themselves to platforms that can easily be fitted into cargo aircraft or even deployed by parachute. Usually, vehicles are dropped separately from personnel, but in extreme cases, they may even be dropped with their crews inside. The very first time this was done was in 1973, when a BMD-1 infantry combat vehicle was dropped from an An-12B transport aircraft. The drop was conducted by Lt Col. Alexander Margelov, son of VDV commander Gen. Vasily Margelov, the man who had devised this means of descent. Gen. Margelov had wanted personally to be in the BMD but was forbidden to do this by a Communist Party leadership reluctant to risk his life. So, he watched his son attempt the mission with, it is said, a loaded pistol to hand

to shoot himself if his plan had led to Alexander's death. Such drops remain an unusual and largely symbolic act, though, and have yet to be conducted in genuine combat operations. In 2018, for example, one of the new BTR-MDM personnel carriers was dropped safely from an altitude of over 1,800m with its crew inside, largely to demonstrate the capacities of the new PBS-950U parachute complex. This includes 11 separate but connected parachutes, as well as a forced air-inflation shock absorber platform, that replaces the less reliable and more violent retro-rockets of earlier versions. With it, vehicles up to BMD-4M in size can be dropped from a minimum altitude of 400m.

Weight is thus always a consideration. One case in point is the KamAZ Taifun-VDV MRAP currently being tested. This is the heavily armoured 4x4 KamAZ 53949 Taifun being offered as part of the defence ministry's MRAP competition, discussed in more detail below, but slightly shorter and lighter, weighing in at 11t instead of 14t. It is thus slightly faster, able to reach top speeds of 105kph. KamAZ is offering an unarmed version able to carry ten paratroopers, one fitted with a BM-30-D remote weapon station on the roof mounting a 30mm 2A42 cannon and a 7.62mm machine gun and able to carry eight soldiers, an ambulance and a fire support variant armed with eight Kornet-D fire-and-forget missiles. The 'battle truck' versions also have such touches as firing ports and racks inside the troop compartment for disposable anti-tank rockets. It remains to be seen whether it is adopted, although the manufacturers are presenting it as a potential standard new troop carrier for the VDV.

The BMD

One response to this tension between protection, firepower and mobility has been the amphibious tracked BMD, the *Boyevaya Mashina Desanta* or Airborne Combat Vehicle. Lightly armoured but heavily armed, this 'pint-pot infantry fighting vehicle' could provide mobility in battle and fire support, but minimal protection for the paratroopers who would largely sit in the open rear of the vehicle. The first BMD was fielded in 1969 and saw service in conflicts from the Ogaden to Afghanistan. With a chassis not that much larger than a typical pick-up truck, the BMD-1 nonetheless mounted a 73mm 2A28 Grom ('Thunder') low-pressure gun and a coaxial 7.62mm PKT machine gun in a turret, two more PKTs in fixed mounts on the bow, and a 9M14 Malyutka ('Baby') or 9M14M Malyutka-M (AT-3/3A Sagger) anti-tank missile on the turret mantlet. Along with two crew, it carried five paratroopers, two of whom sat inside the hull as commander and bow machine gunner, with the rest sitting in the back.

The BMD-1 was fast for a tracked vehicle, able to reach 80kph on road and 45kph cross country and packed a heavy punch for its size. It was also often inaccurate, cramped, and extremely vulnerable to mines or modern anti-tank weapons. In

The diminutive BMD-1 became a symbol of Soviet power projection, and nowhere more so than Afghanistan, where the VDV had to shoulder much of the worst fighting. This BMD-1 is a permanent memorial to fallen paratroopers at the Park Pobedy – Victory Park – complex in Moscow. (Author's Collection)

Although still very much a product of the same design priorities as the original BMD-1, the latest BMD-4M is a much more capable combat vehicle, squeezing considerable firepower into a vehicle still much smaller than the Ground Forces' equivalent, the BMP-3. (Vitaly Kuzmin)

Afghanistan, for example, it suffered badly in mountain ambushes, as its weapons could not elevate adequately. The result was the BMD-2, introduced in 1985, with a new, larger turret mounting a rapid-firing 2A42 30mm cannon and other improvements, but the hull was too small truly for it. In any case the financial crisis which preceded the collapse of the Soviet Union meant relatively few were adopted.

The real successor, and child of the Soviet war in Afghanistan, was the BMD-3 Bakhcha ('Melon Field'), fielded in 1990. With a larger, redesigned hull able properly to fit the BMD-2's turret, it twinned the 2A42 cannon and a co-axial PKT with a launcher for either the 9K111 Fagot ('Bassoon') (AT-4 Spigot) or 9M113 Konkurs ('Contest') (AT-5 Spandrel) wire-guided anti-tank missile. The hull also mounted a 30mm AGS-17 automatic grenade launcher and a 5.45mm RPK machine gun, again operated by two of the mounted paratroopers. Along with the three crew, it could carry five soldiers in all, and despite the extra weight, its more powerful 2V-06-2 water-cooled diesel engine gave it similar performance characteristics to the smaller BMD-1.

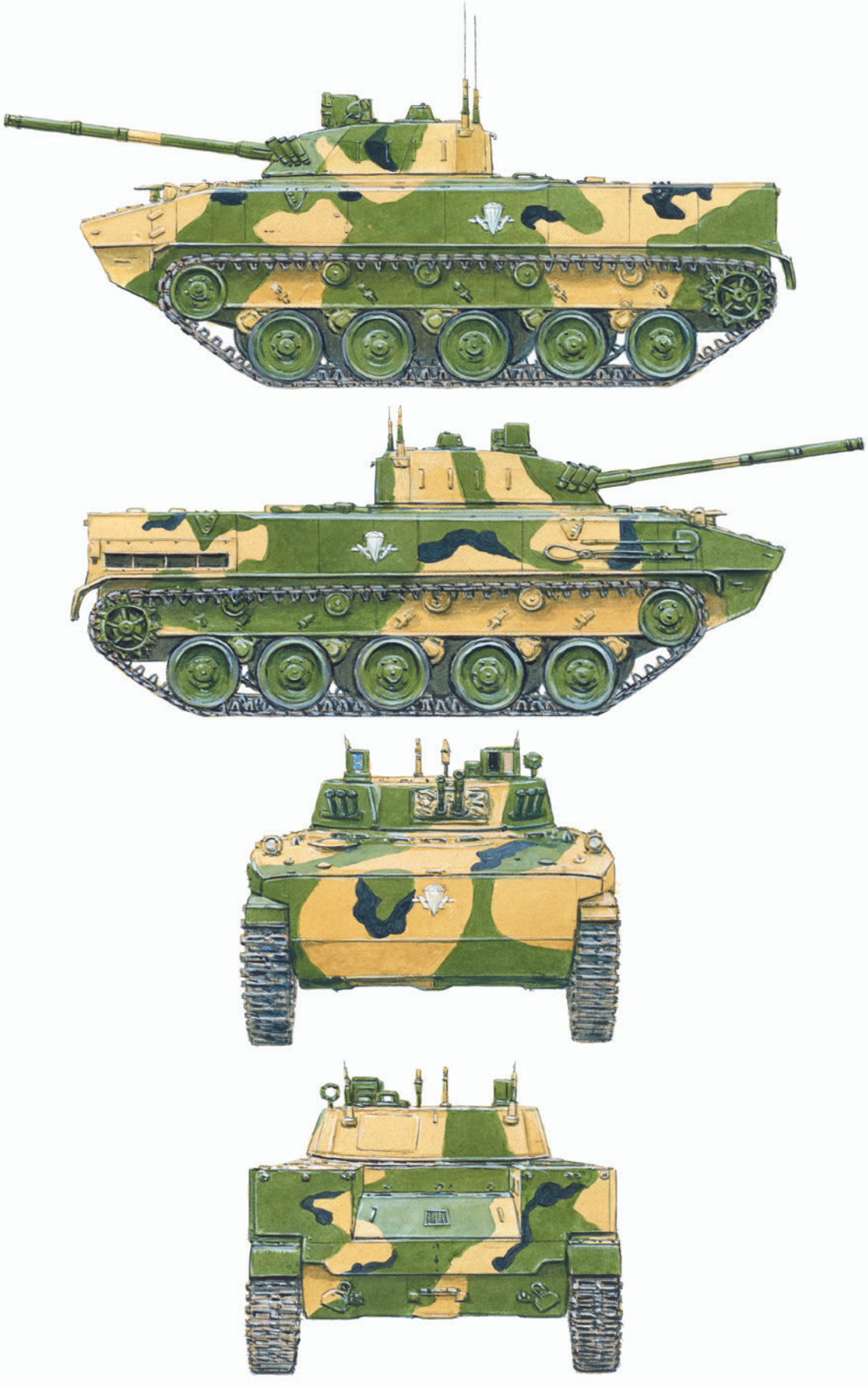
When the BMD-3 was initially being developed, thought had been given to fitting it with a 100mm gun, but this was ultimately rejected on the grounds of weight and cost. Nonetheless, the idea remained attractive, and the decision was made to develop a prototype, which became the BMD-3M, and itself was eventually turned into the BMD-4, which came into service in 2004, with the first going to the 106th Guards Airborne Division's 137th Regiment. Various iterations and updates followed, and the newest BMD-4M Sadovnitsa ('Gardener'), introduced in 2008, is meant to be slowly replacing less capable earlier versions, although this remains perennially under question because of its cost. Nonetheless, this is a much more capable and survivable vehicle, and generally well-regarded by the troops, even if there have been questions as to whether it is worth the cost, given how few troops it can carry and its relatively light armour.

It is in many ways a light tank with troop carrying capabilities, with the usual three crew and space for five soldiers, three in the rear compartment. This is still open, though, and the riders do not fully benefit from the aluminium armour of the hull, itself a trade-off between protection and weight. Its 500 horsepower engine allows it to reach a top speed of almost 70kph on land, while twin hydrojets propel it at up to 10kph in water.

C

BMD-4M AIRBORNE INFANTRY FIGHTING VEHICLE

The BMD-4M *Sadovnitsa* ('Gardener') is the modernized version of the BMD-4 airborne armoured infantry fighting vehicle, developed by the Volgograd Tractor Plant and the Tula KBP Instrument Design Bureau, and manufactured by Kurganmashzavod. Adopted in 2012, it can be air-dropped by parachute, but is more usually deployed by land. Like all the BMD series, it is designed with an eye to speed and firepower more than protection and its two-man Bakhcha-U turret mounts a 2A70 100mm calibre gun with co-axial 2A72 30mm cannon and a PKT 7.62mm machine gun. The main gun can fire both conventional ammunition and the Arkan 9M117M1 laser-guided tandem anti-tank round. Six paratroopers can be carried inside and in the compartment to the rear.



The most distinctive characteristic of the BMD-4M is that it is so heavily armed. Its turret mounts a 100mm 2A70 low-pressure rifled gun fitted with an autoloader and able to fire both high explosive rounds and the 9M117M1 Arkan ('Lasso') laser-guided anti-tank missile. There is also a coaxial 30mm 2A72 autocannon able to be used in a limited anti-air role and a coaxial 7.62mm PKT machine gun. A relatively advanced automated day/night fire control system also allows it to fire on the move with a degree of accuracy not known in earlier versions. Three 81mm smoke grenade dischargers are fitted on each side of the turret. As if that were not enough, the hull mounts an additional PKT and grenade launcher.

The BMD-3/4 chassis is the basis for a range of variants, including the BTR-MDM tractor, the Sprut-SD tank destroyer, the BMD-4K command vehicle, the 2S42 Lotus self-propelled 120mm mortar, and the new Ptitselov ('Little Birds') air defence vehicle mounting the 9M337 Sosna-R ('Pine-R') (SA-24) short-range surface-to-air system with twelve missiles.

Main BMD Platforms

	BMD-1	BMD-2	BMD-3	BMD-4
Year	1969	1985	1990	2004
Crew	2+5	2+5	3+5	3+5
Weight	7.6t	8t	13t	13.6t
Speed: road	80kph	60kph	70kph	68kph
Speed: cross-country	45kph	40kph	45kph	45kph
Armament	73mm 2A28 low-pressure gun Coaxial PKT MG Malyutka or Malyutka-M ATGM 2 fixed hull-mounted PKT MGs	30mm 2A42 cannon Co-axial PKT MG 9K111 Fagot or 9M113 Konkurs ATGM 2 fixed hull-mounted PKT MGs	30mm 2A42 cannon Co-axial PKT MG Fagot or Konkurs ATGM Hull-mounted AGS-17 grenade launcher Hull-mounted RPK MG	100mm 2A70 low-pressure gun Coaxial 30mm 2A72 autocannon Coaxial PKT MG Hull-mounted AGS-17 grenade launcher Hull-mounted 7.62mm PKT MG

The BTR-D

The BTR-D, or *Bronetransportyor Desanta* ('Armoured Airborne Transport') is a highly versatile tracked multi-purpose vehicle that has been in service since 1974 and has since become the basis for a wide range of specialist vehicles, from ambulance to gun-truck. It was based on the original BMD-1 chassis, stretched by 60cm and without its turret. The base model is lightly armoured and also lightly armed, with just two 7.62mm PKB machine guns in fixed mountings on each side of the bow, although it can also mount a machine gun or a grenade launcher on a pintle by the commander's hatch at the top.

Weighing in at 8.5t, the BTR-D can reach a road speed of 61kph, or 35kph cross-country. The usual hydrojets allow it to travel at 10kph in water. It can carry ten soldiers, but its real value has been as an unarmed cargo hauler (the BTR-DG) or a flexible platform for specialist versions. The BREM-D is an armoured recovery vehicle, with a crane, winch and dozer blade, the BTR-D San is an ambulance, and there are also command and communications versions. The most common of these are the BMD-1KShM

A Russian paratrooper works on a BMD-3 after it has been airdropped during the 2018 Slavic Brotherhood joint exercises in Serbia. It can take ten minutes to prepare the vehicle and assemble and remount its personnel – or only around three minutes if the crew drop with the vehicle. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

Soroka ('Magpie') command vehicle and 1V119 Reostat artillery fire direction vehicle. These are supplemented by the BMD-1R Sinitsa ('Tit') division-level command and signals truck with R-161A2M radio and the Kristall-BDS satellite communications vehicle.

However, the BTR-D is especially prized by the VDV as a platform for support weapons and drones. Early variants were quite simple, often only a step or two beyond field modifications, such as by mounting a BTR-DG with a ZU-23 twin 23mm anti-aircraft gun over the cargo compartment, or fitting a pintle mount and reload racks for teams carrying anti-tank or anti-air missiles, the BTR-RD Robot and BTR-ZD Skrezhet ('Screech'), respectively. Increasingly, though, as the Russians embrace the use of drones, the BTR-D is also being used as a specialist launch and control vehicle. The NPDU Sterkh ('Crane') carries a Yak-061 Pchela-1T ('Bumblebee-1T') drone on its launch rail. It is boosted into the air by two small rockets, and then can

Like the *Spetsnaz*, the paratroopers are often used to trial potential new vehicles which may be considered for wider acquisition. A new consortium between the Intrall and UAMZ motor works has recently been proposing a range of vehicles, from a missile-armed light attack car to this vehicle, the Toros APC. Reportedly intended for reconnaissance and recovery missions, it is an armoured 4x4 based on the BTR-60 chassis, carrying two crew and eight soldiers. Here paratroopers put one through its paces. While formally accepted for service in 2018, it remains to be seen if it wins more orders than for the initial test batch. (Vitaly Kuzmin)

A regiment of the 76th Guards Air Assault Division, equipped with BMD-4M and improved BTR-MDMs. Note the distinctive tactical markings on the vehicle flanks. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

remain in the air for up to two hours, with a maximum speed of 180kph, a ceiling of 2.5km and a command range of 60km. It can beam real-time video imagery back to the NDPU or another station, and the operator can zoom into targets of interest, switch to infra-red, activate a forward-looking radar, and then guide the drone back behind friendly lines to land by parachute when its mission is over.

BTR-MD and BTR-MDM

The BMD-1 platform is an increasingly dated one, so in 2008, the Volgogradsky Tractor Plant began working on a replacement for the BTR-D, based on a stretched BMD-3 chassis. This vehicle, the BTR-MD Rakushka ('Shell'), was adopted in 2012, with the first examples coming into service the year after. As with its predecessor, the BTR-MD has a wide range of roles, especially troop carrier (with room for 12 paratroopers in the enclosed rear compartment and one officer in front with the two crew), ambulance (BMM-D Travmatizm), signals vehicle (Lastochka-2), munitions truck and drone command vehicle (Poliot-K). It typically sports a 7.62mm PKTM machine gun mounted by the commander's roof hatch, as well as another in a ball mount in the front hull. Some have been fitted with remote weapon stations, and others are unarmed. Its all-welded aluminium hull provides protection against small arms up to 7.62mm calibre and some shrapnel. A 2V-06-02 water-cooled diesel gives it a top speed of 70kph on roads, and like most VDV vehicles, it is amphibious and has hydropneumatic suspension that can be adjusted to reduce the vehicle's profile or provide more ground clearance. This also helps it cope with being airdropped: two can be

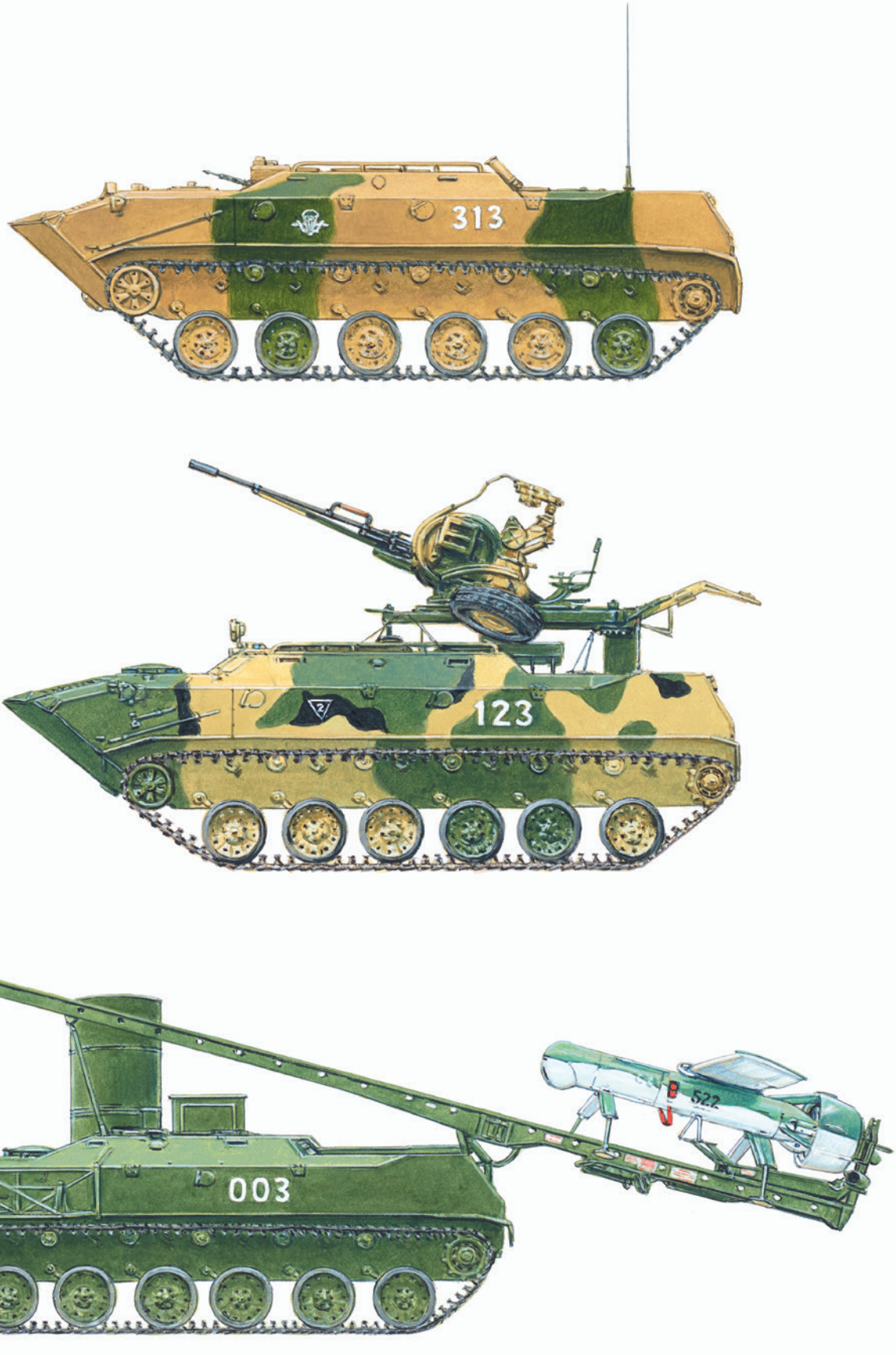
D

BTR-D AIRBORNE ARMOURED TRANSPORT

The BTR-D is a utility vehicle derived from the BMD-1 airborne armoured infantry vehicle. Since its introduction in 1974, it has become the basis for a wide range of specialist vehicles, from command and communications carriers to the 2S9 self-propelled gun. Illustrated here are three versions. The standard BTR-D (top) can carry ten men as well as its three crew, or a suitable range of cargoes. It is armed with two bow-mounted 7.62mm PKB machine guns and can be fitted with a pintle-mounted machine gun or grenade launcher.

In the middle is a BTR-ZD air defence vehicle. Some only carry teams armed with man-portable anti-air missiles and reloads, but this one is fitted with a twin 23mm ZU-23 autocannon. The gun is simply a regular, wheeled carriage that is bolted to the chassis, and can be dismounted. Although the ZU-23 is a dated design, it still has utility against helicopters and light aircraft, but increasingly it is also used for fire support in urban and mountain operations.

At the bottom is a later variant, the Stroy-P drone launcher, mounting the launch rail for a Pchela-1T UAV. The launch rail is retracted and lowered for travel. The Yakovlev Pchela-1T ('Bumblebee') is a reconnaissance and target-designation system launched using two solid-fuel rockets.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carried in an Il-76 transport aircraft, the workhorse of Russia's strategic lift capacity, or one can be slung under a Mi-26 heavy cargo helicopter.

The advanced BTR-MDM, introduced in 2014, is based on the BMD-4 chassis, but broadly similar, although reportedly more reliable. It has a more powerful UTD-29 engine, but this essentially makes up for the greater weight of the design. In the future it will acquire the usual range of variants, although at first only the basic BTR-MDM personnel carrier and cargo tractor versions were fielded, followed in 2018 by the MRU-D air defence control vehicle, mounting an 1L122-1E radar and a Barnaul-T integrated control system. This transmits targeting data directly to dismounted fireteams armed with shoulder-fired 9K333 Verba ('Willow') anti-air missiles, so they are ready to fire even before low-flying targets are visible to them.

Fire Support

In pursuit of the VDV's goals of squeezing maximum mobility and firepower into as small and light a vehicle as possible, the 2S25 Sprut-SD ('Kraken-SD') tank destroyer was built on the basis of a BMD-3 chassis as a successor to the VDV's ASU-85s, which had been phased out in the 1970s because of the advent of the BMD-1. The Sprut-SD is armed with the stabilized 125mm smoothbore 2A75 gun used on the T-90 tank, capable of firing APFSDS, HE-Frag and HEAT rounds, as well as the 9M119 Svir ('Vale') (AT-11) anti-tank missile, and a coaxial 7.62mm PKT machine gun.

One former crewman appositely described the Sprut-SD as 'a wonder in theory, a death-trap in the field.' It is fast, manoeuvrable and amphibious, and can be para-dropped with its three crew inside. At the same time, though, it is under-protected and overly temperamental. Its aluminium armour can withstand at best 23mm rounds on its heavier frontal armour (and this is often considered over-optimistic), at most 12.7mm elsewhere. Even though its chassis has been strengthened with the addition of an extra road wheel on each side, and a new recoil system, there have been persistent suggestions that the gun is too large and powerful for it. In sustained combat conditions, when it may be firing 6–8 rounds a minute, this can cause problems with the frame

A Sprut-SD at the Army 2018 show outside Moscow, firing its 125mm 2A75 gun. Despite concerns about its reliability and survivability on the modern battlefield, in many ways this vehicle epitomizes the VDV's maximum firepower for minimum footprint design philosophy. (Vitaly Kuzmin)

of the vehicle and also make steering difficult. It did not help the Sprut-SD's image when an early version caught fire after a parade on Red Square in 2010 because of a fuel leakage. This may help explain why, after fewer than a hundred were acquired, a hold was placed on further purchases. The status of the advanced Sprut-SDM1, based on the BMD-4, and with a new fire control and more powerful engine, is also in doubt. There are suggestions that the VDV may instead jump to a whole new 125mm tank destroyer design instead, but either way, this design does not appear to have been a success.

While many suggest that common sense demands that its successor be a light armoured vehicle mounting advanced missiles, there is a constituency which feels that in an age of active missile defences, a large-calibre, high-velocity gun is still the only real tank-killer. They are advocating a follow-on that mounts either the 2A82-1M 125mm cannon mounted on the T-14 Armata tank, or a new 152mm beast. Quite how this could be mounted on a chassis that can still be air-dropped or even fit into most Russian transport aircraft, though, remains to be seen.

In the absence of more Sprut-SDs, the VDV rely on the not inconsiderable firepower of their various BMDs and BTR-Ds, including the 2S9 Nona-S, based on the BTR-D chassis, which mounts a breech-loaded 2A60 120mm gun mortar able to fire a wide range of rounds out to a range of 8.8km, or 12.8km with rocket-assisted projectiles. Relatively light, and able to fire at high elevations, the Nona-S proved especially effective in the mountainous environments of Afghanistan and Chechnya. With the introduction of advanced munitions such as the Kitolov-2 ('Whaler-2) laser-guided shell (which can deliver a shattering blow to the weaker top armour of an enemy vehicle), as well as the 2S9-1M Nona-SM upgrade (with an advanced fire control system), it is likely to remain in service for some time to come, although a replacement, the 2S42 Lotos ('Lotus'), was unveiled in 2019. Better protected, longer-ranged and able to carry more than the Nona's 25 rounds, the Lotos will be based on the BMD-4M chassis. It is due to be introduced in 2020, but it will take years for it to become the standard.

The paratroopers also deploy a range of lighter fire support vehicles. These include variants of the Tigr LMV, such as the Kornet-D, which mounts two 9M133M Kornet-EM firing stations, each with four tubes to launch this advanced fire-and-forget missile, as well as eight more missiles in reserve. It can fire both anti-tank rounds, with a tandem-HEAT round designed to defeat advanced reactive armour, as well as thermobaric rounds. The VDV also expects to field the Gibka-S, which is a Tigr-M chassis carrying a retractable pod with four Igla-S or Verba short-ranged anti-aircraft missile launchers.

THE NAVAL INFANTRY: FINDING THEIR SEA LEGS

The Naval Infantry (MP: *Morskaya pyekhota*), part of the larger Coastal Troops command, are a force of over 12,000 marines, with a brigade attached to each of Russia's four fleets and a regiment with the Caspian Flotilla. They have been active in Ukraine and Syria, but unlike the much larger US Marine Corps, they have historically been the poor relation in Moscow's power projection forces compared with the VDV. This helps explain why they have, in the main, been expected to depend on regular vehicles and weapons, not least because the Soviets in any case emphasized amphibious capabilities on

Pacific Fleet Naval *Spetsnaz*, along with marines from the 155th Guards Naval Infantry Brigade and the *Grachonok*-class anti-sabotage ship P-377, conduct a fast boat assault off Kamchatka in 2018. Naval *Spetsnaz* have their own specialist equipment, such as one-man German-made Rotinor DiveJet swimmer delivery vehicles and two-man Proton-3s and the torpedo-like Sirena-UM. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

many platforms. Nonetheless, some systems such as the Nona-S amphibious self-propelled gun-mortar and PT-76 amphibious light tank were especially geared to their purposes, and the Russians still field Zubr-class hovercraft landing craft. However, with renewed interest in expeditionary operations, the Naval Infantry have begun to receive specialist kit, with dated vehicles such as the PT-76 (in service since 1951) being phased out. In the near future the Naval Infantry are expected to trial a new, full-amphibious Naval Infantry Fighting Vehicle (BMMP: *Boyevaya Mashina Morskoi Pyekhoty*), which would be the basis for a whole family of marine vehicles.

Most MP vehicles are essentially the same as those of the army, such as the T-72B3, T-80BV and T-90 tanks and the BMP-3 infantry combat vehicle, although they also use their own version of the Nona, the 2S9-1 Sviristelka ('Little Waxwing'), with an increased ammunition capacity of 40 rounds. However, the marines do make especially extensive use of the wheeled 8x8 BTR-82A armoured personnel carrier. This is an evolution of the veteran BTR-60, adopted in 2013, progressively improved in protection,

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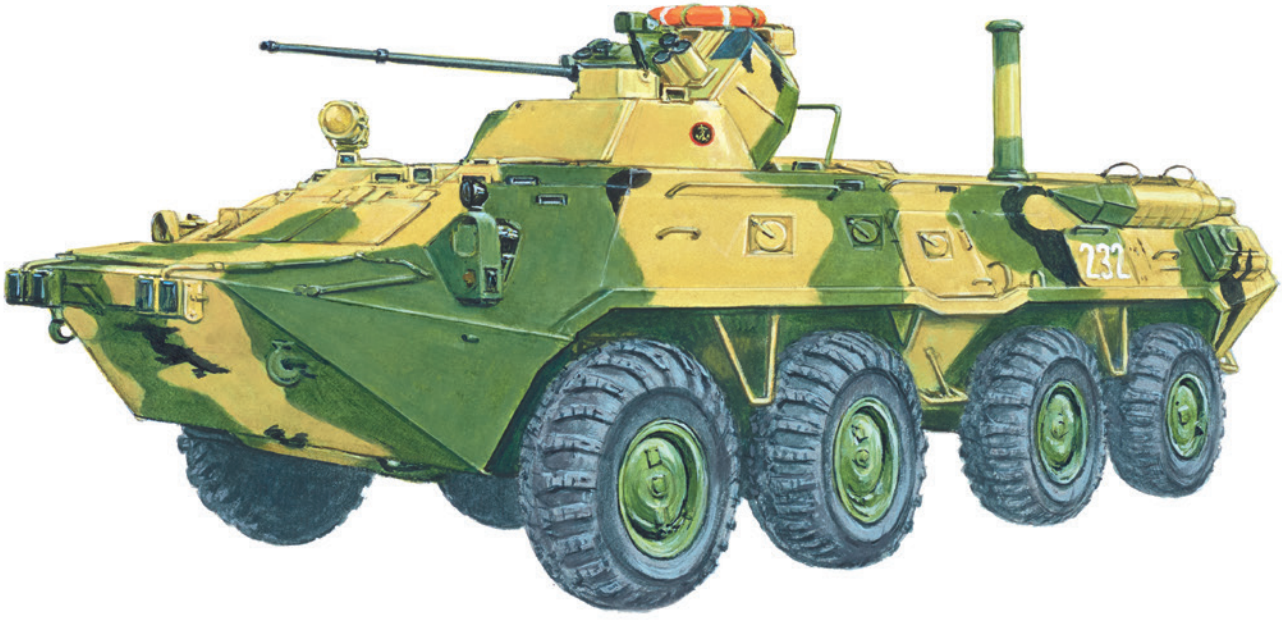
NAVAL INFANTRY BTR-82A and BMMP

The present and perhaps future workhorses of the Naval Infantry. Top is a BTR-82A from the Pacific Fleet's 155th Guards Naval Infantry Brigade ready for amphibious operations – note the raised engine intake snorkel on the rear deck, and the life ring on the turret, demonstrating that this is an exercise rather than a combat deployment. Likewise, the Naval Infantry badge on the side of the AU-220M Baikal remote turret is a non-standard addition to the usual tactical markings.

As the Russian military shifts increasingly to new families of vehicles based on common chassis, the UralVagonZavod defence combine is pushing a new amphibious combat vehicle for the Naval Infantry, which could be the basis not just for a personnel carrier, but also everything from an anti-air system to a tank destroyer. This is still on the drawing board, and there is no certainty that the BMPP – *Boyevaya Mashina Morskoi Pyekhoty*, or Naval Infantry Combat Vehicle – will be fielded, but the lower image reflects the current design. It carries three crew and ten marines and is designed for a mix of protection and speed; while driven by tracks on land, hydrojets would reportedly give it a speed of over 30kph in water, three times faster than the BTR-82A. This version mounts an AU-220M Baikal remote turret with 57mm autogun, coaxial 7.62mm machine gun and two 9M120 Ataka anti-tank missiles.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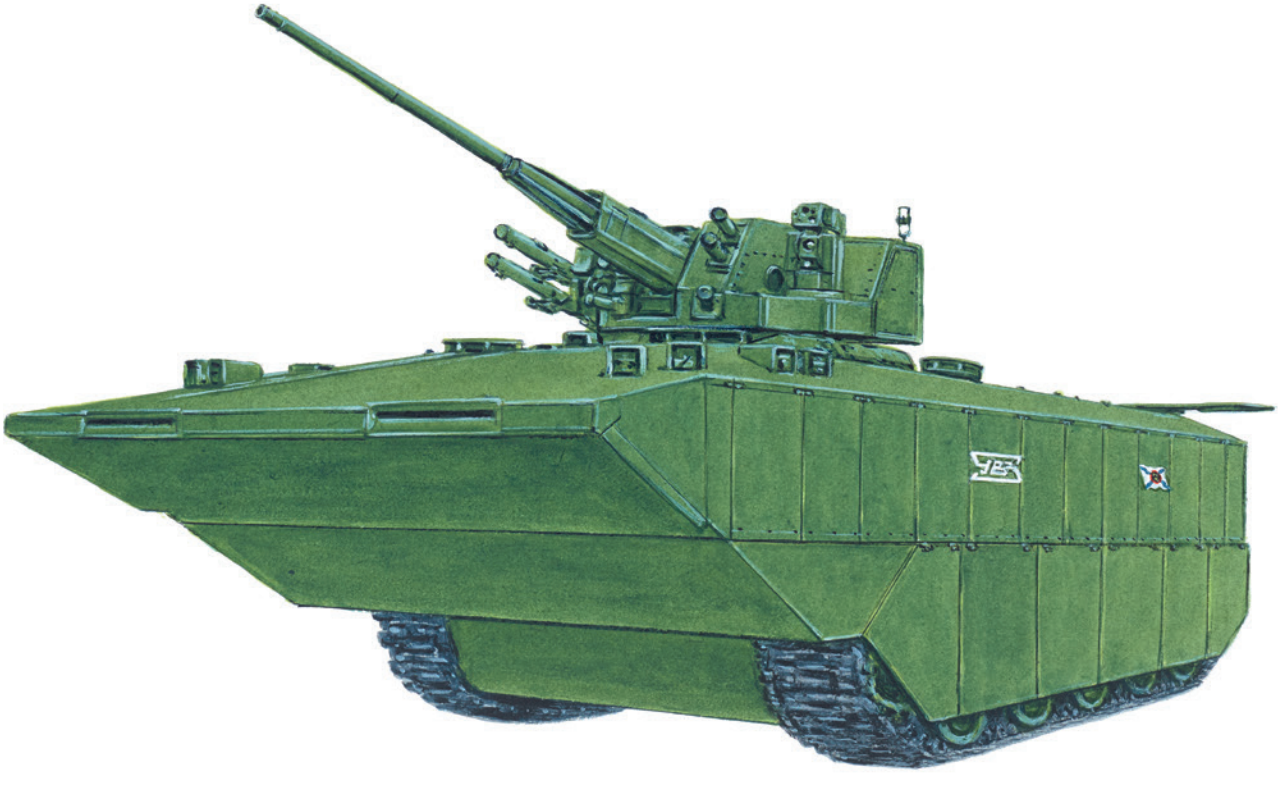

performance, reliability and armament. It has a crew of three and can carry seven fully equipped infantry, with side doors to allow them quickly to disembark from their compartment (compared with the roof hatches of the original design). Especially importantly for the MP, it is fully amphibious, and can swim at 10kph, allowing it to deploy directly from larger assault ships and make its own way to the beach. It is fitted with a BPPU turret with modern night vision systems, a 2A72 30mm autocannon and a coaxial 7.62mm PKT machine gun, although some new BTR-82As will be fitted with the new AU-220M Baikal remote turret with a BM-57 57mm autocannon instead.

The BMMP

Nonetheless, the BTR-82A is by no means ideal for coastal assaults and can be swamped in high seas or bogged down in soft sand beaches. Taking advantage of the new enthusiasm for power projection forces in Putin's Russia, in 2018 OmskTransMash, a subsidiary of the politically influential UralVagonZavod industrial combine, unveiled the concept for a new specialized amphibious BMMP. With the regular army increasingly looking to heavily armoured, tracked infantry combat vehicles such as the T-15 Armata and the Kurganets-25, weighing 48t and 25t respectively compared with the BTR-82's 14t, the scope for simply adapting their designs seems less plausible. The Kurganets-25 is amphibious, but its weight means that there are doubts about whether it would even be as capable as the BTR-82A in coastal assaults. Meanwhile, as the navy plans new amphibious assault ships, the MP are clearly in favour, and this was an attempt to respond to this, in a way that the Coastal Troops command seems eager to embrace.

It is still uncertain whether this will make its way into the defence ministry's procurement schedule, and the precise shape of what is still, after all, a concept design only. However, as things currently stand, the BMMP looks like something halfway between the US Marines' large LVTP-7

BTR-82s of the Caspian Flotilla's 177th Naval Infantry Regiment securing a beachhead. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

amphibious assault vehicle and a conventional infantry combat vehicle. While based on a conventional-looking tracked chassis, the BMMP would have a retractable bow plane and rear fin to help it achieve higher speeds in water, over 30kph, while being propelled by water jets. This would allow it to deploy from ships further out to sea – minimizing the risk they would face from coastal defences – and greater cross-country capability on land. It would carry ten soldiers and mount a Kinzhal ('Dagger') remote-controlled turret with a 57mm automatic cannon. If approved, it would be fielded in 2023 at the earliest and likely become the basis for a series of specialized MP versions, such as a command vehicle, tank destroyer and air defence gun/missile system.

SPECIALIZED FORCES: WAR AND PEACEKEEPING

Within the Ground Forces, the Russians are increasingly standing up specialized units, such as the 200th Independent Motor Rifle Brigade for Arctic operations and the 15th Independent Motor Rifle Brigade for peacekeeping missions. Furthermore, the lessons of conflicts such as Chechnya and Syria have also emphasized that some combat environments, from urban to desert, have their own operational requirements worth addressing.

Arctic Warfare

Russia has long relied on its ability to fight in cold-weather conditions as both a defensive and offensive asset, but as Moscow increasingly looks to the High North as a strategic theatre, it is forming and equipping forces to match. To a considerable extent this is the responsibility of the air forces and the navy. New military facilities are also established, such as the innovative *Arkticheski Trilistnik* ('Arctic Trefoil') on the island of Alexandra Land, part of the Franz Josef Land archipelago, Russia's most northern base. As a result, there is a perceived need for ground forces able to operate in extreme polar environments.

The 200th Brigade, headquartered at Pechenga, is formally part of the Coastal Forces, although until 2012 it was part of the Ground Forces' 6th Army. It fields winterized T-80BV tanks and BTR-80 personnel carriers, but

The MT-LB may be ageing, but it has demonstrated its capacities in every environment and role. This is one in ambulance configuration in Tajikistan, taking part in the joint 'Dushanbe-Antiterror' exercise. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

The Russians have long been accustomed to fighting in the snow, but new vehicles are giving them new capabilities. These Russkaya Mekhanika A-1 snowmobiles are on exercise in the Pskov region in deep winter. The A-1 is a new version of the Taiga Patrul 551, with a top speed of 80kph. Launched in 2015, specifically for the military market, it includes such details as fasteners for two pairs of skis, an assault rifle, and a shoulder-fired rocket launcher. At the Army-2017 military exhibition, the Volga State Technological Institute even proposed that this vehicle could be converted into an unmanned robo-snowmobile, especially for cargo roles, either remotely piloted or 'slaved' to a manned lead vehicle in a convoy. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

also has a range of distinctive vehicles well-suited to this environment. For light scout operations, it fields a range of snowmobiles, including the Tayga 551 Patrul ('Patrol') and the TTM-1901-40 Berkut-2 ('Golden Eagle-2'). The Tayga 551 is produced by Russkaya Mekhanika, and is also used by the police and Ministry of Emergency Situations, although the army version has an armoured, self-sealing fuel tank. A conventional two-seat vehicle

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200th BRIGADE OPERATING IN ARCTIC CONDITIONS, 2019

The 200th Brigade, headquartered in Pechenga in the Murmansk region, is a specialized Arctic warfare unit and equipped to match. Here a mixed force is shown on exercises, during a simulated assault.

In the foreground, a TTM-1901-40 Berkut snowmobile **(1)** carries scouts forward at speed to establish an observation position at the flank of the advance. Russia's first snowmobile design with an enclosed cockpit, the Berkut can be fitted with a 7.62mm PKP machine gun on a pintle mount atop the cabin but is unarmoured and depends on its speed and mobility.

The main convoy is led by a new Toros Arctic combat vehicle **(2)** based on an MT-LBu chassis and armed with an MB-2 turret mounting a 30mm 2A42 automatic cannon, coaxial 7.62mm PKTM machine gun, a side-fitted 30mm AG-17 automatic grenade launcher and six Tucha 902V smoke-grenade launchers. Some replace the AG-17 with two Konkurs-M (AT-5 Spandrel) anti-tank missiles. Behind it come DT-10P Vityak ('Knight') articulated all-terrain transport vehicles **(3)**, highly mobile platforms especially adapted to soft and treacherous conditions, from snow to swamp. The front unit contains the drivers and engine, while the rear one can be configured for passengers or cargo or even mount artillery or air defence systems. Note the 200th Brigade's badge on the cabin side, highly visible even in muted tactical tones, which would be whitewashed over in actual combat.

To the rear, a Pantsir-S1 **(4)** point air defence system (with the NATO designation SA-22 Greyhound) is on overwatch. Designed for short- and medium-range protection, as well as an integral radar, it mounts twelve missiles and two twin 2A38M 30mm autocannon on a KAMAZ-6560 truck chassis, although in the 200th Brigade these are being supplemented and in due course will be replaced by a version without the guns, based on the DT-10P.

Above, one of the new Mi-8AMTSh-VA versions of the veteran Mi-8 helicopter **(5)** banks steeply. This is a special Arctic version, modified to handle extreme low temperatures as well as an advanced inertial navigation system to make up for the way GPS reception is often spotty near the poles. In action, the twelve hardpoints on its stub wings can carry gun pods, rocket pods, Shturm-V (AT-6) or Ataka-V (AT-9) anti-tank missiles or Igla-V (SA-18) air-to-air missiles.

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Combat engineers mounted in a snow-camouflaged BTR-82 on exercise in the Rostov region. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

weighing in at 320kg, its two-stroke RMZ-551 engine can take it to speeds of 100kph. The Berkut-2 is a larger vehicle, notable for its enclosed, heated cockpit, although with a maximum speed of just 60kph. Nonetheless, it can mount a 7.62mm PKP machine gun and can tow soldiers on skis or cargo sleds weighing some 300kg. In the future, the brigade may also adopt the 'Northern' version of Chaborz M-3 buggy, which replaces its wheels with tracks and skis, and is able to carry three people, one driving and two manning pintle-mounted machine guns or automatic grenade launchers.

The venerable MT-LB (*Mnogotselevoy Tyagach – Legky Bronirovanny*: Multi-Purpose Light Armoured Towing Vehicle) amphibious armoured tractor, a design dating back to the 1950s, remains a stalwart of Russia's Arctic operations, especially the MT-LBV with wider tracks to better cope with snow. Typically armed only with a single 7.62mm machine gun in a simple conical turret (although the 200th Brigade has replaced these with 12.7mm Kords), it has been used as everything from an armoured personnel carrier able to carry up to 11 soldiers along with the two crew, to a fire support vehicle, including the Shturm-S ('Storm-S') anti-tank version used by the brigade, with a retractable launcher for 9M114 Kokon ('Cocoon') (AT-6 Spiral) ATGM. The slightly larger, unarmed MT-LBu is similarly versatile. Despite minor improvements, including the ML-MLBSh adopted by the Naval Infantry, with no turret and a more powerful engine, essentially it is still the cheap, rugged vehicle first seen in the middle of the last century, a testament to the practicality of its design.

Nonetheless, as polar operations become more of a priority, the MT-LB has been adapted as the Toros ('Hummock') Arctic combat vehicle. Based on the larger MT-LBu chassis, with a more modern engine and more extensive heating systems, it can carry six fully equipped soldiers (even allowing for the greater bulk of winter kit) and is more heavily armed. Its MB-2 turret mounts a 30mm 2A42 automatic cannon, coaxial 7.62mm PKTM machine gun and a side-fitted 30mm AG-17 automatic grenade launcher or two Konkurs-M (AT-5 Spandrel) anti-tank missiles.

For the transport of supplies, as well as some personnel, the 200th Brigade also relies on DT-10PM and DT-30PM articulated all-terrain vehicles. These

Even in an age of drones and hovercraft, some special forces vehicles still have four legs. Just as the Arctic units use dog-sleds and reindeer, mountain warfare units still use mules, horses and rugged ponies, and the 470th Working Dogs Training Centre outside Moscow continues to train dogs for tracking, mine-detection, search and rescue and security duties. Here soldiers exercising in the foothills of the Western Sayan mountains in southern Siberia are leading horses used to transport munitions and other supplies. The Ryazan Higher Airborne Command School has even bought 30 horses to test their value to the VDV, although no one has yet suggested they should be para-dropped. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

are highly mobile tracked platforms especially adapted to soft and treacherous conditions, from snow to swamp. The DT-10PM has a cargo capacity of 10t, and the larger DT-30PM 30t, but in essence they are similar designs, with a front unit containing the drivers and engine, and a rear one that can be configured for passengers or cargo or even mount artillery systems, including the Tor M2-DT with a Tor ('Torus') (SA-15 Gauntlet) surface-to-air missiles or the Pantsir-SA ('Cuirass-SA') gun/missile air defence complex, both using the DT-30PM chassis.

The 80th Independent Brigade, headquartered at Alakurtti, is also a designated Arctic combat unit, although not yet as prepared for High North operations as the 200th. While essentially using the same vehicles, it is setting up a force to guard the remote Chukotka peninsula that will largely or entirely be mounted on quad bikes, probably the Russkaya Mekhanika PM-500-2, as it reportedly has better cold-weather performance, even though at present this is not offered in an armed version. Given the need for rapid responses to any potential attack, as well as the need to operate on rocky coastlines and also in the brief summers when snows melt, quad bikes are considered to be a better choice than snowmobiles or conventional vehicles such as the capable but slower MT-LB.

Of course, these vehicles are also at the disposal of the *Spetsnaz* and other special forces, when they are operating in these environments. These brigades were also amongst the first to pioneer another kind of 'vehicle' that has begun making a comeback with Russia's Arctic forces and is now in use by both: sleds pulled by either dogs or reindeer. They are prized not just for their reliability and efficiency, but also their silence, making them especially useful for covert reconnaissance and raiding.

Desert Warfare

Russia's involvement in the Syrian Civil War since 2015 was very successful in turning a tide that looked as if it might drown Bashir al-Assad's regime in Damascus. As of writing, though, the conflict is still running, with no final victory in sight. Although Moscow has been eager to minimize its frontline involvement in the war, above all providing airpower support for

Russian Military Police on patrol in Manbij, northern Syria, mounted in Gaz Tigrs. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

regime forces and their militia allies, it has had to deploy a range of Ground Forces, from Naval Infantry to Military Police, as well as the Wagner Group (a pseudo-mercenary force originally established by the GRU, military intelligence, under cover of being a commercial military company). They have been employed in missions ranging from securing the Russian airbase at Hmeimim to stiffening ground attacks such as the recapture of Palmyra in 2016.

So far, though, this has not been reflected especially widely in their forces' equipment. To a large extent, this is because the military high command hopes and wants this war to be a one-off deployment, and not to prove a lasting distraction from their main missions, especially defence of the Motherland and projection of Russian power in its immediate neighbourhood. As one – possibly over-optimistic – General Staff officer put it to the author, 'every ruble spent on desert kit will be welcome today, but useless in a few years' time.'

The M65 Rys has seen particularly heavy use in Syria, especially by the Military Police (*see* below), who appreciate its reliability and protection from mines. The BTR-82A has also been used by the Naval Infantry in Syria, but to a considerable extent simply to give it full live-fire testing in a true combat environment. In 2016, the Russians supplied the Syrian Arab Army with a number of UAZ Patriot pick-ups armed with 12.7mm Kord heavy machine guns and AGS-17 automatic grenade launchers as highly mobile convoy escorts and also as counters to the numerous armed technicals, especially their ubiquitous Toyotas, fielded by the various rebel groups.* This seems to

* See New Vanguard 257 *Technicals*

Reflecting the experiences of Syria, the Russians are experimenting with their own 'technicals'. At a parade in Yekaterinburg in 2019, an AM-1 leads a column of vehicles in desert camouflage, led by UAZ Patriot pick-ups, the first two armed with 12.7mm machine guns and the third with a 30mm automatic grenade launcher. Beyond use in Syria, the Russians are exploring the value of such vehicles for counter-insurgency operations and deployments into forests and similar rough terrain, where larger and heavier vehicles will struggle. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

have sparked wider interest in such vehicles, and in 2017 it was announced that one of the 30th Motorized Rifle Brigade's four mechanized battalions would be equipped with UAZ Patriots, some carrying seven soldiers and a machine gun, others a heavy weapon or other piece of equipment, from 82mm mortars to radar. The 30th Brigade is based at Samara in central Russia, hardly desert territory, but a region of steppes, forests and mountains. Given that the UAZ Patriot can reach speeds of 150kph and is much more fuel efficient than heavier, armoured APCs, the idea appears to be to test the notion that such a force could provide highly mobile raid and reaction forces in a range of difficult environments, from deserts to woodland, where the larger BTR-80s of the rest of the brigade will have trouble or be forced to move more slowly.

Urban Warfare

On the other hand, the Russians do consider it likely that they may be forced to operate in urban environments, and the lessons of the two Chechen wars in particular highlighted the specific challenges of such engagements. Conventional tanks proved sitting ducks once they had been separated from their infantry support, with the T-80 tank suffering especially in its blooding during the First Battle for Grozny (1994–95). Likewise, fire support vehicles based on personnel carrier platforms, including the field expedients used in both Afghanistan and Chechnya, mounting ZU-23 anti-aircraft guns, proved vulnerable to mines, shoulder-fired rockets and even high-powered rifles.

The first response was the BTR-T (*Bronentransportyor-Tyazhely*: Heavy Armoured Transporter), unveiled in 1997. This was essentially a veteran T-55 tank hull – at the time, Russia had some 1,200 of this 1958-vintage tank in its reserve stocks, so it needed something to do with them – converted into a heavily armoured personnel carrier. A tank hull that is not designed as a troop transport is hardly ideal, and it could only carry five soldiers along with its two crew. It could also mount a range of turret-mounted weapons: a 2A42 30mm autocannon and Konkurs missiles, or twin 30mm 2A38M autocannons, or a 12.7mm NSV heavy machine gun and AGS-17D grenade launcher. However, it was an expensive and clumsy way to move five soldiers and failed to win any enthusiastic champions in the military,

A detail shot of an unmanned turret on the BMPT-72 Terminator. Note the twin-mounted 30mm 2A42 autocannon in elevated position – they can be raised about twice as far, to ensure they can reach upper stories of buildings and hilltops. Alongside is the launch housing for one of the sets of two laser-guided 9M120 Ataka missiles. The housing at the top contains the commander's B07-K1 panoramic sight, with optical, low-level laser range finder and television channels. (Author's Collection)

Rosgvardiya MRAPs drawn up in front of City Hall in Moscow. (Author's Collection)

so only a few were bought by the Ground Forces to test the concept. Given that no export orders materialized either, the project quietly died.

However, the BTR-T did open the way for the BMPT, the *Boyevaya Mashina Podderzhki Tankov* or Tank Support Combat Vehicle. Although the Russians have since renamed the class of vehicles as BMOP, *Boyevaya Mashina Ognevoi Podderzhki* or Fire Support Combat Vehicle, to make its mission sound broader to potential export customers, the BMPT is widely and more descriptively known simply as the 'Terminator'. Under consideration since 2005, the BMPT-72 was only introduced in 2013, and has since served in Syria and been exported to Kazakhstan. This initial BMPT is based on the commonly available and rugged T-72 tank chassis but dispenses with the BMP-T's ill-fated notion of combining fire support and troop carrying, and instead concentrated on serving up a double dose of the former.

It mounts an unmanned turret carrying a bewildering array of weapons intended to meet any threat: four laser-guided 9M120 Ataka (AT-9 Spiral-2) missile launchers, two 30mm 2A42 autocannons, a 7.62 mm PKTM machine gun, and two AG-17D or AGS-30 automatic grenade launchers. The Ataka can be fitted with a tandem warhead able to penetrate all but the most

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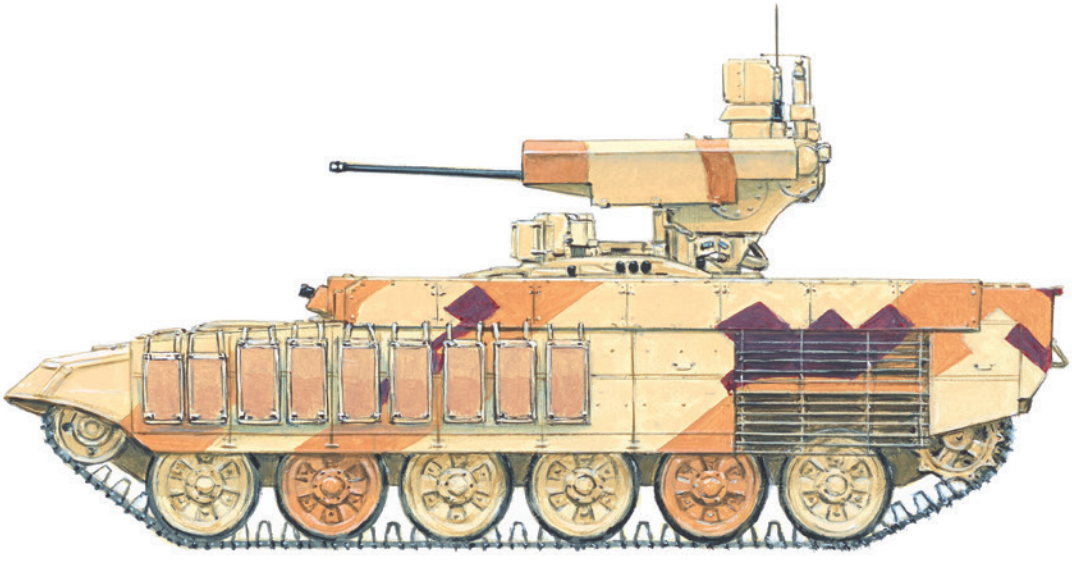
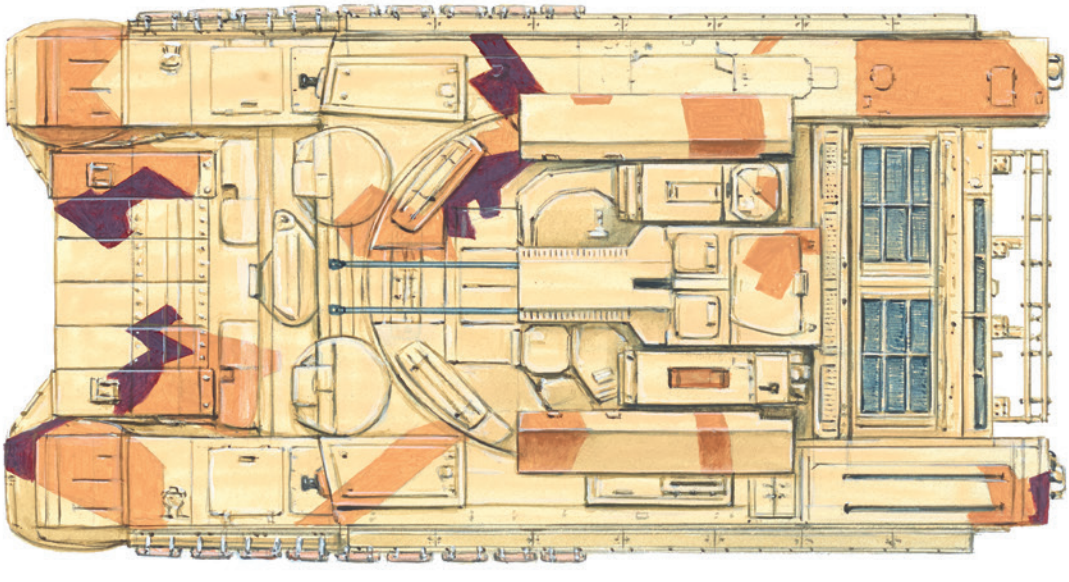
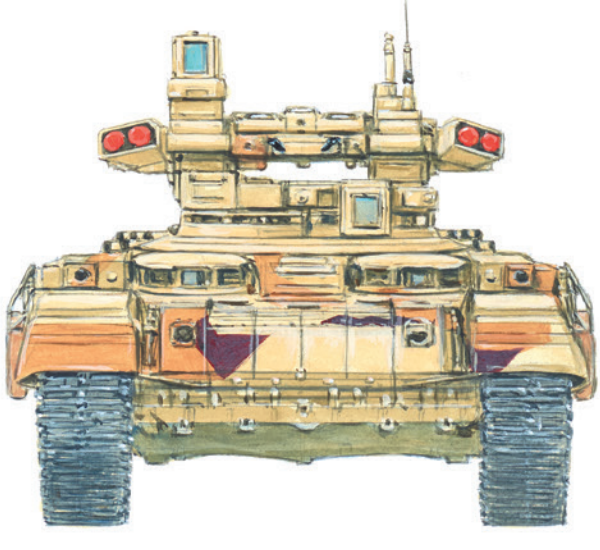
BMPT-72 IN SYRIA, 2017

This is the later BMPT-72 tank support vehicle variant, a modification of a T-72 tank rather than being a custom-built model. With a cheaper, durable chassis, and various modifications such as the removal of the AGS-17 grenade launchers and thus reducing the crew to three, the BMPT-72, also known as the Terminator-2, is especially intended with exports in mind, as the Russian Army is likely in due course to adopt a Terminator-3 version based on the new, Armata tank family. Kazakhstan was the first buyer.

This is a BMPT-72 being field-tested in Syria in 2017, hence the distinctive sandy splinter-pattern camouflage, and the use of a cheaper low-light image intensification sight rather than the thermal imager fitted to the Kazakh vehicles. Officially, it entered Syrian Arab Army service, with some reports saying it was attached to the Republican Guard's 104th Brigade, and others the Liwa al-Quds or Jerusalem Brigade, a militia force largely recruited from Palestinian Syrians. In a way, though, this was a meaningless issue, as in practice it was crewed, at least at first, by Russians. This was both because not enough Syrians had been trained on the BMPT and also because Moscow wanted first-hand assessments of the new design's strengths and weaknesses. Note the Syrian-pattern baggage panniers on the side of the vehicle, generally used for crew kit, rations, and other stores. Additional Relikt second-generation reactive armour was later added before the vehicle was deployed to operations in the Homs governorate.







heavily armoured tanks, or a thermobaric warhead for use against personnel, especially those dug in or sheltering in buildings. The autocannon can elevate to 45 degrees, allowing them to rake rooftops and valley sides, and typically one is loaded with anti-personnel rounds and the other with armour piercing. The belt-fed grenade launchers can fire 30mm VOG-30D high explosive grenades to an effective range of 1,700m. With five crew, each with their own sighting systems, including day/night capabilities, four different targets can, in theory, be engaged at once.

This is a formidable arsenal, although it remains to be seen how effective it would be in complex combat environments against well-trained professionals with modern anti-tank systems. Nonetheless, the Russians appear wedded to the design, with the tactical disposition being that they would be deployed in teams of two BMPTs and one regular tank in urban environments, one BMPT to two tanks in open terrain.

The BMPT-72 Terminator 2, unveiled in 2013, is a retrofit option for existing T-72s, that omits the grenade launchers and thus brings the crew down to three. This is largely an export design, though, as for the future the Russian Army is deciding between the BMPT versions based on the T-90 or T-14 tank chassis.

SECURITY FORCES: HURRICANES AND PUNISHERS

Russia has a large and varied internal security apparatus, both a legacy of Soviet times and a sign of the regime's concern about the threat posed by terrorism and domestic unrest.* The largest is the *Rosgvardiya*, or National Guard, which is some 180,000 strong (plus around as many security guards working for FGUP Okhrana, the state's private security contractor). They include the elite Moscow-based First Independent Operational Purpose Division (1st ODON), still widely known as the

* See Elite 197 *Russian Security and Paramilitary Forces since 1991*

A VAI military traffic police car next to a KaMAZ 5350 configured as a command truck for the Interior Troops, since made into the National Guard. (Author's Collection)

Dzerzhinsky Division, a series of locally based commando teams known as Special Designation Detachments (OSNs), and the riot police of the Mobile Special Purpose Squads (OMON).

The National Guard used to be subordinated to the Ministry of Internal Affairs (MVD) and known as the Interior Troops (VV) but was made into a separate service under a loyal favourite of Putin's in 2016. Nonetheless, the MVD also retains certain elite police units, including the commando teams of its anti-drugs directorate. Other law enforcement agencies have their own specialist forces, such as the Federal Penal Enforcement Service (FSIN) prison service's hostage rescue teams. The powerful Federal Security Service (FSB) controls the elite Alfa anti-terrorism commando force, as well as other specialist commando units such as Vympel ('Pennant') responsible for nuclear security. It also controls the 175,000-strong Border Troops (PV) who protect the country's borders by land, sea and air. Since 2012, Russia has also had a specific Military Police force, too, which crosses the boundaries between soldiering and law enforcement.

LMVs

Given these forces' roles and usual areas of operation, it is unsurprising that they are widespread users of both regular 4x4 utility vehicles and their armoured counterparts. There are, for example, numerous variants of the Tigr designed specifically for them. The GAZ-233034 Tigr SPM-1 (SPM standing for Special Police Vehicle) is a favourite of the OMON, with a light bar and siren, firing ports in the armoured glass side and rear windows, and attachments that can mount weapons on the roof or a radio jammer. The GAZ-233036 SPM-2 is designed for anti-terrorist operations, with heavier armour and firing ports in the roof hatches. The R-145BMA is an SPM-2 kitted out as a command centre for major incidents, with extensive communications equipment.

The new VPK-3924 Medved ('Bear'), by contrast, is a large and tall new design, 5.9m long and 2.6m high, intended for much more hostile, counter-insurgency environments. It is a 4x4 MRAP (although a 6x6 version was shown at the Russian Arms Expo-2013 exhibition in Nizhny Tagil), with a v-shaped lower hull to channel away explosive blasts. With a 312hp

The GAZ Tigr is not only the army's main LMV, but also widely used by police and security forces. Here are two SPM-1 Tigrs seen in North Ossetia. One in the blue-striped livery of the Military Auto-Inspectorate, the army's traffic police, sits next to a red-striped one belonging to the Military Police (VP). Note the machine gun on the VAI model and the grenade launcher on the VP's. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

The Medved MRAP has only been bought to date by the security forces, but the manufacturers are still seeking to sell it to the Ground Forces as a heavy reconnaissance and support vehicle. (Vitaly Kuzmin/Creative Commons CC-BY-SA-4.0)

YaMZ-536 turbocharged diesel engine, the Medved can reach 100kph on roads, although its cross-country speed is just 35kph. On the whole, though, this is not seen as a serious limitation, as it is essentially intended for urban operations. It can carry up to eight men and two crew, with doors at the rear and in the roof to permit rapid disembarkation. A ring-mounted machine gun can be fitted to a roof hatch, but most are unarmed. A small batch were bought by the MVD in 2014 as the SPM-3, but these went to the *Rosgvardiya* when it took over the Interior Troops in 2016. The MVD made another order for its own use in 2017.

The Border Guards turned to the KamAZ manufacturer for their own MRAP, the BPM-97 Vystrel ('Gunshot') – BPM stands for *Boyevaya Pogranichnaya Mashina*, or Border Combat Vehicle. In service since 1999, it is based on the 4x4 KamAZ 4326 truck chassis, with an armoured body capable of withstanding small arms fire: up to 7.62mm rounds on the rear and sides, 12.7mm on the sharply angled front. It can mount a turret with various weapons options up to a 30mm cannon, but in practice it is generally unarmed or else fitted simply with a pintle-mounted machine gun. The BPM-97 can comfortably carry six soldiers, or more in a pinch. Several have seen action in the undeclared war in south-eastern Ukraine, with at least one and maybe as many as three being destroyed by pro-government forces. Along with Kazakhstan's and Azerbaijan's, some other Russian security units adopted the Vystrel in small numbers, including the Federal Prison Service's special forces and the Ministry of Emergency Situations. The KamAZ-43269 Dozor ('Patrol') version was later adopted by the army units protecting Russia's nuclear arsenal.

The Federal Security Service's internal security units, not to be outdone, use the Zil Karatel LMV ('Punisher'), a low, slab-sided and broad-grilled MRAP that, in fairness, does look as if Batman ought to be driving it. With a maximum speed of 150kph, the Karatel is unarmed and only moderately armoured, and its nine passengers (plus driver) reportedly have to suffer a bumpy ride, even though a hydraulic ramp to the rear and clamshell doors at the side again allow for rapid and easy entry and exit. However, it was

explicitly designed to look menacing, and since 2014 it has been deployed by the FSB's special forces and also some Border Troop units.

Other National Guard Personnel Carriers

The *Rosgvardiya* have also been early adopters of the Ural Automotive Plant's entry to the army's Taifun heavy MRAP competition. The Ural-63095 Taifun is a conventional 6x6 truck design, heavily armoured and capable of carrying three in its cab and another 16 in the compartment behind. Weighing in at 24t, it is considered proof against anything up to 14.5mm armour piercing rounds and up to 8kg of explosives underneath the hull. Although it can be fitted with a remote-controlled machine gun, most in use to date are unarmed personnel carrier versions, with a few command and communications versions. For the military competition, further variants are offered, including ambulance and electronic warfare platforms, but no decision has yet been made on which – if any – design will get the army's blessing.

The Ural-4320VV is an older design fulfilling a broadly similar role, originally commissioned by the Interior Troops when they were still part of the MVD and in service since 2014. The Ural-4320VV is essentially an armoured version of the 6x6 Ural-4320 truck, a workhorse of the Soviet then Russian armed forces since 1977. Along with the driver, it can carry 15 soldiers, and while it does not have an especially good cross-country performance because of its weight (17.3t) and configuration, it can travel at 90kph on the road, and its high wheelbase means it can negotiate rubbled streets and similar conditions with relative ease. It can reportedly withstand a mine blast of up to 6kg explosive, and it has self-sealing fuel tanks and can run on flat tyres. Nonetheless, despite the presence of firing ports, it is designed to transport security troops in hostile environments, but not the battlefield. It is unarmed, and the truck's height can make disembarkation under fire an uncomfortable process. In one operation in Dagestan, for example, a soldier jumped badly and managed to accidentally fire his assault rifle back into the vehicle, where ricochets injured several of his platoon.

A National Guard *yefreitor* or lance corporal (evident from the single bar on his shoulder strap) in their distinctive urban camouflage uniform, in front of an Astais Patrol-A MRAP in *Rosgvardiya* livery in Moscow in 2019. Note the optional machine gun turret mounting a 7.62mm PK on top of this armoured variant of the KamAZ 53949 truck. (Author's Collection)

National Guards (note their distinctive maroon berets) on parade in Red Square in 2018. (Russian Presidential Press and Information Office www.kremlin.ru/Creative Commons 4.0 International)

As if their existing array of vehicles in use were not enough, the *Rosgvardiya* are now beginning to field the 4x4 and 6x6 Astais Patrol-A and Patrol-SN respectively. These are MRAPs based on a KamAZ 53949 truck chassis, easily confused with other MRAPs in Russian use, and with similar characteristics (and even looking very like a smaller Ural-4320VV). The shorter wheelbase version can carry three in the cab, seven in the rear, and both have firing ports and also the capacity to mount a small, open-topped machine gun turret.

At the other end of the scale is the Chechen-built Chaborz buggy. Perhaps influenced by the close friendship between Chechen leader Ramzan Kadyrov and *Rosgvardiya* commander Viktor Zolotov, the National Guard have

The *Rosgvardiya* has adopted the Chaborz M-3 buggy, presumably largely for counter-insurgency operations in the North Caucasus, the very environment in which it was initially developed by the Chechens. The broad wheelbase that provides stability for what otherwise might look like a top-heavy vehicle, is very visible in this photograph. (Vitaly Kuzmin)

been the most enthusiastic customers of the Chaborz. They now field the M-3, a three-seat version of this angular buggy, which has a top speed of 130kph and can reportedly even climb 80-degree slopes. Alongside the driver is an operator for a grenade launcher, while behind and above them stands a machine gunner armed with a 7.62mm PKT. The Chaborz saw limited service in Syria in use by Chechen military police. A larger, six-seat Chaborz M-6 armed with both a 7.62mm PKT and also a top-mounted 12.7mm Kord machine gun was unveiled in 2018 but has as yet no users outside Chechnya.

Crowd Control

The primary mission of the *Rosgvardiya* is public security, and to this end it has a substantial array of specialist vehicles, especially water cannon. At the top end of the scale, the *Rosgvardiya* has several Lavina-Uragan ('Avalanche-Hurricane') vehicles based on an 8x8 Ural-532365 lorry chassis, a successor to the earlier Lavina that could claim to have been the largest water cannon in the world, but proved ungainly for that very reason. Inside its armoured body, resistant to light small arms fire, four crew control not only two primary water cannon nozzles in remotely controlled mounts on the top of the cab, but two others built into the front bumpers. An internal tank holds 9,000 litres of water, enough for ten minutes' operation. The main cannon can spray this out to 60m, the secondary ones 20m. Foam can be used instead of water, and dyes can automatically be added to the water to mark rioters or chemicals to irritate. Lights and eight video cameras provide an all-round awareness of the Lavina-Uragan's surroundings and also recordings for later prosecutions, while an eight-barrelled grenade launcher on the roof can launch tear gas, stun and smoke rounds.

A slightly less aggressive approach to crowd control is represented by the Kalashnikov Shchit ('Shield'), later renamed Stena ('Wall'). This riot-control vehicle can literally extend a metal wall across a street. Based on a lightly armoured KamAZ truck chassis, the Stena mounts a large, multi-part metal shield, some 4m high, on a boom that can be lowered in front of the vehicle.

The Russian police and National Guard use a range of trucks and vans for both personnel and prisoner transports – the latter is popularly known as an 'avtozak'. This KamAZ example in police livery was seen in Moscow in 2015. (Author's Collection)

The 1st ODON 'Dzerzhinsky Division' is one of the National Guard's full militarized units, and its equipment includes BTR-80A APCs, BMP infantry fighting vehicles and T-72BM tanks such as these. Note the Relikt third generation explosive reactive armour. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

This barrier can extend laterally, to fit the width of a street, to a maximum of 7.5m. The Stena can continue to move while its barrier is deployed, so it can literally sweep protesters along with it. The barrier also has a platform at its back, so that riot police can take an elevated position looking out over a crowd and firing ports for them too. Above the barrier, the original design of the Stena also mounted a water cannon, but this has since been removed, not least because of issues with also fitting a large enough water tank for this to be useful. The *Rosgvardiya*'s OMON, who participated in the development of the design were reportedly enthusiastic, and ten are now in service around the country.

Military Policing

Established in 2010, the new Military Police (VP: *Voyennaya politsiya*) are expected to perform a wide range of missions, including law enforcement, battlefield security, counter-insurgency and public order operations. They have had a particular role in Syria, where they have been given prominence distributing aid and clearing recaptured areas of militants, booby traps and arms stockpiles, both because this was a necessary task – and in some regions, the locals trusted Russian outsiders more than the government's troops and security police – and also because it suited Moscow's narrative about their intervention being an humanitarian one.

They are therefore extensive users of LMVs, especially the Tigr and the M65 Rys. They have also acquired some Taifun MRAPs, not only the Ural design but, confusingly enough, also the KamAZ-63968 Taifun-K offering. Although there are shorter wheelbase 4x4 versions, as noted above, the main KamAZ Taifun is again based on a 6x6 truck chassis, although the axles are

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SECURITY VEHICLES

As well as the usual range of MRAPs and LMVs, Russia's extensive security apparatus also deploys specialized vehicles designed for particular missions and environments. Above, is a BPDM Taifun-M 'anti-sabotage vehicle', built by the NPO Strela design bureau on a BTR-82 chassis for the 12th Main Directorate of the Defence Ministry, responsible for security of Russia's nuclear arsenal. The BPDM is used to guard strategic missile forces sites and, especially, mobile missile batteries on the move. As such, it mounts a remotely controlled turreted 7.62mm PKTM machine gun, but its main role is to maintain full-spectrum surveillance of the surrounding area. To this end, it has deployed its sensor tower, which includes both night-vision optic sights and a Kredo-1 ground surveillance radar. It also has a radio-electronic sensor suite as well as jamming systems. Finally, the vehicle also carries a small Eleron-3SV surveillance drone, which can be unpacked and launched from its separate rail in less than ten minutes by a trained crew and provide full-motion video coverage while staying in the air for up to two hours.

Below, is a *Lavina-Uragan* (Avalanche-Hurricane) water cannon in Rosgvardiya livery. The rearing horse decal shows that it is from the National Guard's Crimean command, a structure created after Russia's annexation of the peninsula in 2014, which has been provided with a single Lavina-Uragan from the Moscow city command. Built on a Ural-532362 heavy truck chassis, it mounts two independently controlled, high-power hoses on the roof, and two secondary ones built into the front bumper. An eight-barrel grenade launcher on the roof can fire smoke, gas or stun munitions, and integral video cameras provide constant coverage which can be transmitted directly to a command centre.

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more evenly spaced than with the Ural version and the cab front is notably blunt. It can carry two in its cab and 16 in the main compartment. Slightly lighter, at 21t, it has broadly similar levels of protection and performance, but a marginally shorter operational range.

Initially displayed on parade in Moscow, they have apparently also been seen in Syria. This appears not just to be a valid use for MRAPs given their missions, but also an extended field trial, with the VP being used to test the relative merits of the Ural and KamAZ contenders.

Nuclear Security

The 12th Main Directorate of the Defence Ministry (12 GU MO) is responsible for the security of the country's nuclear forces and testing grounds. As such, it is an elite and secretive organization, which controls not just the guard units of nuclear bases, but also the Special Tactical Groups tasked with moving warheads around the country.

In the interests of security, 12 GU MO units wear regular military uniforms (typically with artillery insignia) and they largely use standard equipment, but do also have certain specialized vehicles reflecting their particular role. As well as the aforementioned KamAZ-43269 Dozor, for example, they also field a larger 6x6 version of the BPM-97, the SBA-60K2 Bulat ('Damask'). This was developed as a cooperative venture between the manufacturers KamAZ and Zaschita, with a larger rear compartment, able to carry eight fully equipped troops or communications or electronic warfare equipment. It has met only limited success to date, but in 2014, 12 GU MO ordered around 50, mainly of the 15M107 Listva ('Foliage') mine detection and clearing version. It mounts a large metal detector antenna on its hull reportedly able to locate mines at a range of 100m, even when moving at up

As well as the nuclear security troops of the 12th Main Directorate (GU MO), the KamAZ-43269 Dozor version of the BPM-97 has found favour with some smaller units. In this case, officers of OSN Saturn, the Moscow region special forces team of the Federal Penal Enforcement Service, pose around their Dozor. Note the way the triangular side-doors are designed to provide cover for officers alongside the vehicle. (Vitaly Kuzmin)

An RS-24 Yars, also known as the Topol-MR, mobile ballistic missile, of the kind the 12th GU MO are designed to protect. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

to 15kph, as well as a pulsed microwave system to detonate or neutralize explosive devices by frying their circuitry. Onboard jammers can also block command signals in a 70m radius. As well as a driver, commander and sensor operator, the Listva carries two bomb disposal officers for manual de-mining when technological solutions fail. These vehicles are attached to units of Topol, Topol-M and Yars mobile intercontinental ballistic missiles, intended to ensure their road routes are safe and also to provide more scope for them to operate off the main highways.

Especially interesting, though is the 15Ts56M BPDM (*Boyevaya Protivodiversionnaya Mashina*: Anti-Sabotage Combat Vehicle) Taifun-M, no relation to all the other Typhoons in Russian service. Its role is to patrol areas around nuclear launch facilities and, above all, to escort missiles on the move. Its genesis was in the closing years of the Soviet Union, with the original 15Ts56 being based on a BTR-80 chassis. However, with the Soviet economy in crisis and the USSR breaking apart at the end of 1991, the BPDM project fell into limbo. In 2007, it was restarted, in part as a response to a revival of Russia's mobile missile programme, and the first 15Ts56M, now developed from the BTR-82, first appeared in 2013.

This vehicle has a secondary combat role but is first and foremost a reconnaissance and surveillance platform. As such it is only lightly armed with a remote-controlled turret simply mounting a 7.62mm PKTM machine gun. Instead, it has an extensive electro-optical sensor suit and even a small drone, allowing it to maintain a wide surveillance perimeter.

Full details are still secret, and there appear to be two versions, one of which also mounts a radio and bomb command signal jamming system. However, they all appear to have optic sensors including a TKN-4S night vision sight, as well as a Kredo-1 ground surveillance radar with a folding antenna, and also sonic sensors said to allow a trained operator to distinguish the steps of a person from those of an animal. On its roof, the BPDM also carries an Enics Eleron-3SV surveillance drone. The drone cannot be launched from the vehicle: it is dismounted and launched from a launch rail on the ground, a process that should take no more than ten minutes. Once

The Ministry of Defence's Taifun project for a new standard family of 4x4, 6x6 and 8x8 MRAPs remains, as of writing, undecided. That has not, however, stopped a range of services – including military ones – from jumping the gun and ordering from the ranges of two main contenders, Ural and KamAZ. The Military Police even have bought some of both, and this is the KamAZ-63968 Taifun-K in the VP's distinctive livery. (Author's Collection)

in the air, this small unmanned aircraft has a maximum range of some 25km but would generally loiter no more than 5km from the BPDM, remaining in the air for up to two hours. The Eleron-3SV has a camera which can save footage on an internal memory card or broadcast full-motion video back to the command unit if it is within a 5km range.

The BPDM has a crew of five: driver, commander, gunner, radar operator and drone operator. There is room for up to four soldiers as well, although generally they travel in separate personnel carriers. As well as their own systems and the feed from the drone, the operators are able to connect to external sensors. These can include remote video cameras, conventional capacitance wires, or seismic and optic barriers, which can be monitored within a range of 5km.

PROSPECTS FOR THE FUTURE

The flow of new designs, both speculative and government-ordered, shows little sign of drying up. A proliferation of elite and specialist forces, all with their own requirements (or at least with different ideas as to how to meet them), the political imperative to keep defence sector companies solvent by preferential treatment if possible, and a hope of securing export deals, all combine to maintain a wide range of new and existing suppliers.

For the *Spetsnaz*, the main area of interest appears to be small, 2–4-man vehicles, and/or even smaller ones. One unconfirmed but persistent rumour has them seeking individual combat platforms described by one source as an 'all-terrain Segway.' The VDV is focusing its assets on phasing out older vehicles with BMD-4Ms, BTR-MD and -MDMs, although if the KamAZ Taifun-VDV MRAP finds favour, this could conceivably eclipse the latter. For the Naval Infantry, much rests on the BMMP project. It may never get beyond early concept phase, but if it – to use an inappropriate metaphor – takes off, then it will consume much of their development capacity but also prove an expensive but potentially mission-changing moment for the marines.

Another version of the Taifun, here being evaluated in southern Siberia, is the KamAZ short-wheelbase Taifun-K. (Russian Ministry of Defence/ Creative Commons CC-BY-4.0)

As for the security forces, their attention is likely to continue to be on various LMVs and MRAPs, in different shapes and sizes. Increasingly, though, they will be seeking to integrate these more fully with the drones that the Russians are now using ever more widely. In this respect, the BPDM Taifun-M may prove something of a trend-setter. The police and the *Rosgvardiya* are known to be looking at adding extra communications systems and monitors in more of their personnel carriers, so that at the very least personnel can see drone feeds to increase their tactical awareness. The Border Troops are also likely to be doing the same, although they tend to be rather more secretive in their plans.

At the same time, the Russians are expanding their new-found enthusiasm for drones into wider use of combat robots. The Vikhr ('Whirlwind') unmanned heavy combat ground vehicle was shown at the Army-2016

A 9K132 Shturm-SM tank destroyer. The MT-LB hull may be dated, but the missile is still effective. Like other militaries, the Russians are grappling with the question of how far their regular forces will need dramatic reform in an age of missiles and drones. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

show. Based on a BMP-3, this substantial, 14.7t vehicle can be controlled remotely at a range of up to 10km, or even operate in partial autonomous mode, in which case it will follow certain set parameters (such as conduct a programmed patrol or move to a particular location) on its own. It mounts an ABM-BSM 30 turret armed with a 57mm or 30mm automatic cannon, coaxial 7.62mm PKTM machine gun and six Kornet-M anti-tank missiles. It could be a formidable combat asset, but is still in development, with unconfirmed reports suggesting problems with the command systems.

By contrast, the smaller Uran-9 is already in limited service, having been tested in the field (with distinctly mixed results) in Syria. As well as a 2A72 autocannon and PKTM, the Uran-9 has two extendable firing arms mounting four 9M120 Ataka anti-tank or 9K333 Verba anti-air missiles, as well as up to twelve Shmel-M short-range thermobaric rockets. Reliability and accuracy still appear to be at best patchy, but the manufacturers, JSC 766 UPTK (part of the Kalashnikov Group) appear confident these are software rather than design issues.

Finally, the Nerekhta (named after a river) was originally developed by the Degtaryov concern as an armoured radio-controlled artillery spotting vehicle, but it has since been developed into a combat patroller. Mounting a complex sensor suite including thermal imaging optic sights, a laser range finder and a ballistic computer, it can likewise follow a pre-programmed patrol route and alert its command station if it detects anything unusual. At this point it will be brought under manual control, if need be to engage the enemy with its 12.7mm Kord machine gun. Its relatively high speed of 30kph, sensor suite and survivability explain why 12 GU MO has bought an undisclosed number to help guard nuclear launch sites and convoys.

Although cost, nationalism and sanctions will likely block future sales, Russia's special forces have explored the use of imported designs such as this American RC Strike-C utility task vehicle. (Vitaly Kuzmin)

President Putin has given his blessing for a continued expansion and modernization of Russia's special forces. In a more literal version of the same, a priest blesses new BMD-4Ms and BTR-MDMs at a ceremony to mark their handover to the 76th Guards Air Assault Division in 2019. Note the 7.62mm PKMT MG and smoke grenade launchers on the front corner of the BTR-MDM in the foreground. (Russian Ministry of Defence/Creative Commons CC-BY-4.0)

Further on or over the horizon are even more ambitious and imaginative projects. At the Army-2018 defence exhibition, for example, Kalashnikov unveiled a 4m-tall 'controlled bipedal walker' that is essentially the 'mech' beloved in science fiction, with an enclosed cockpit, two arms and two legs. This was a non-working mock-up, a publicity stunt rather than a serious design, and one that actually inspired much ridicule. However, there are several unconventional designs on the drawing boards, hoping to become proof of concept models, from individual exoskeletons that will allow an individual soldier to carry an extra 50kg in kit without tiring, to militarized versions of the Hoversurf Scorpion 3 four-propeller flying motorbike, already in service with the Dubai police. While the thought of fielding a one-man vehicle capable of flying at 65kph may seem tempting, the fact that it has an endurance of only 25 minutes and is extraordinarily vulnerable to enemy fire has ensured that even the *Spetsnaz* have passed up the opportunity to adopt it. Nonetheless, Russia continues to produce all kinds of ideas for new combat vehicles, and in the main its special forces seem eager to try them.

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AUTHOR'S NOTE

Translating out of Cyrillic always poses challenges. With the exception of the genitive masculine -ogo ending (that sounds like -ovo), I have generally chosen to transliterate words as they are pronounced (so, for example, *Bronetransporter* is rendered as *Bronetransportyor)*. I have also ignored the diacritical 'soft' and 'hard' signs found in the original.

GLOSSARY OF ACRONYMS USED IN THIS TEXT

APC	Armoured Personnel Carrier
ATGM	Anti-Tank Guided Missile
ATV	All-Terrain Vehicle
BMD	Boyevaya Mashina Desanta: Airborne Combat Vehicle
BMMP	Boyevaya Mashina Morskoi Pyekhoty: Naval Infantry Combat Vehicle
BMOP	Boyevaya Mashina Ognevoi Podderzhki: Fire Support Combat Vehicle
BMP	Boyevaya Mashina Pyekhoty: Infantry Combat Vehicle
BMPT	Boyevaya Mashina Podderzhki Tankov: Tank Support Combat Vehicle
BPDM	Boyevaya Protivodiversionnaya Mashina: Anti-Sabotage Combat Vehicle
BTR	Bronetransportyor: Armoured Transporter
BTR-T	Bronetransportyor-Tyazhely: Heavy Armoured Transporter
BTR-D	Bronetransportyor Desanta: Airborne Armoured Transporter
FSB	Federalnaya Sluzhba Bezopasnosti: Federal Security Service
FSIN	Federalnaya Sluzhba Ispolneniya Nakazaniy: Russian Federal Penal Enforcement Service
GRU	Glavnoye Razvedyvatelnoye Upravleniye: Main Intelligence Directorate (of the General Staff), military intelligence (technically as of writing known as the GU, the Main Directorate, although GRU is still generally used)
GU MO	Glavnoye Upravleniye Ministerstvo Oborony: Main Directorate of the Defence Ministry
LMV	Light Multi-role Vehicle
MP	Morskaya Pyekhota: Naval Infantry
MRAP	Mine-Resistant Ambush Protected
MT-LB	Mnogotselevoy Tyagach – Legky Bronirovanny: Multi-Purpose Light Armoured Towing Vehicle
MVD	Ministerstvo Vnutrennikh Del: Ministry of Internal Affairs
ODON	Otdelnaya Diviziya Osobennogo Naznacheniya: Independent Special Purpose Division (of the National Guard)
OMON	Otryad Mobilny Osobennogo Naznacheniya: Mobile Special Purpose Detachment (of the National Guard) (i.e. riot police)
OSN	Otryad Spetsialnogo Naznacheniya: Special Purpose Detachment (i.e. police SWAT team)
PV	Pogranichnye Voiska: Border Troops
Rosgvardiya	Rossiiskaya Natsionalnaya Gvardiya: Russian National Guard
Spetsnaz	Spetsialnaya Naznacheniya: Special Purpose, i.e. special forces (literally, Special Designation)
SPM	Spetsnalnaya Politseiskaya Mashina: Special Police Vehicle
VAI	Voennaya Avtoinspektsiya, Military Auto-Inspectorate (i.e. army traffic police)
VDV	Vozdushno-Desantnye Voiska: Air Assault Troops (i.e. paratroopers)
VP	Voyennaya Politsiya: Military Police
VV	Vnutrenniye Voiska: Internal Troops